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16. Abstracts

Data was collected for: fuel usage for the State and smaller political jurisdictions; refuse disposal by type and amount of disposal; and developing apportioning factors for distributing emissions among the various counties. Point source data was provided by the Missouri Air Conservation Commission. Hydrocarbons, carbon monoxide, and nitrogen oxides were estimated for the gridded areas in the Kansas City and St. Louis AQCR's as well as all five pollutants (particulates, and sulfur oxides also) for the grids in Greene County based on source totals and apportioning factors provided by the State and local agencies. Allowable emissions were calculated for all point sources in Regions 137, 138 and 139 in accordance with State Regulations and model regulations. Apportioning factors were developed for distributing area source emissions to counties in Regions 137, 138 and 139, and for distributing emissions from automotive sources to the grids in St. Louis, St. Charles and Jefferson counties of Region 070. The resultant pollution data was formatted in accordance with the requirements in the Federal Register and other guidelines. The data are presented in two forms: pie charts and tables. The sources tabulated are: Power Plants; Point Sources; Other Combustion; Incineration; Open Burning; Automotive; Other Mobile; and Other.

17. Key Words and Document Analysis. 17a. Descriptors

Air pollution	Hydrocarbons	Automobiles
Exhaust emissions	Carbon monoxide	Thermal power plants
Inventories	Nitrogen oxides	Combustion
Fuels	Particles	Incinerators
Refuse disposal	Sulfur oxides	

17b. Identifiers/Open-Ended Terms

Missouri

17c. COSATI Field/Group 13B

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USCOMM-DC 40329-P71

FINAL REPORT

Emission Inventory

for the

State of Missouri

August 20, 1971

FINAL REPORT

Emission Inventory

for the

State of Missouri

prepared by

The IBM Corporation
Federal Systems Division
Gaithersburg, Maryland 20760

for

The Environmental Protection Agency
Air Pollution Control Office
Durham, North Carolina, 27701

Authorization:

Task Order Number 2
BOA 68-02-0043

August 20, 1971

FOREWORD

The following report represents the results of the work performed under BOA 68-02-0043, Task Order Number 2 from The Environmental Protection Agency, Air Pollution Control Office. A note of thanks is due to Mr. E. J. Lillis and D. Dunbar of the EPA Project Office and Mr. Peter Culver, the EPA Project Engineer for their assistance and excellent cooperation during the study. A note of special thanks is due to Mr. Michael T. Marshall, William F. Keeling, John Cotter and Glen Cunningham of the Missouri Air Conservation Commission; Mr. Jerald Gers, Division of Air Pollution Control, St. Louis County Health Department and Mr. Robert Hocker, Division of Air Pollution Control, Department of Public Safety, City of St. Louis, without whose efforts successful compilation of this task would not have been possible.

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Emission Inventory

for the

State of Missouri

SECTION I - AREA DESCRIPTION

The State of Missouri is divided into two intrastate and three interstate air quality control regions as shown in Figure 1. The two intrastate regions are:

a. The Metropolitan St. Louis Intrastate Air Quality Control Region (070) illustrated in Figures 2 and 3. The Missouri portion of this region consists of four counties (St. Louis, St. Charles, Jefferson and Franklin) and the City of St. Louis. Except for Franklin County, these political jurisdictions are subdivided into a series of grids based on the Illinois grid system. The grids are square with sides of 30,000, 20,000, 10,000 and 5,000 feet. The grid coordinate and numbering systems are shown in Figures 2 and 3.

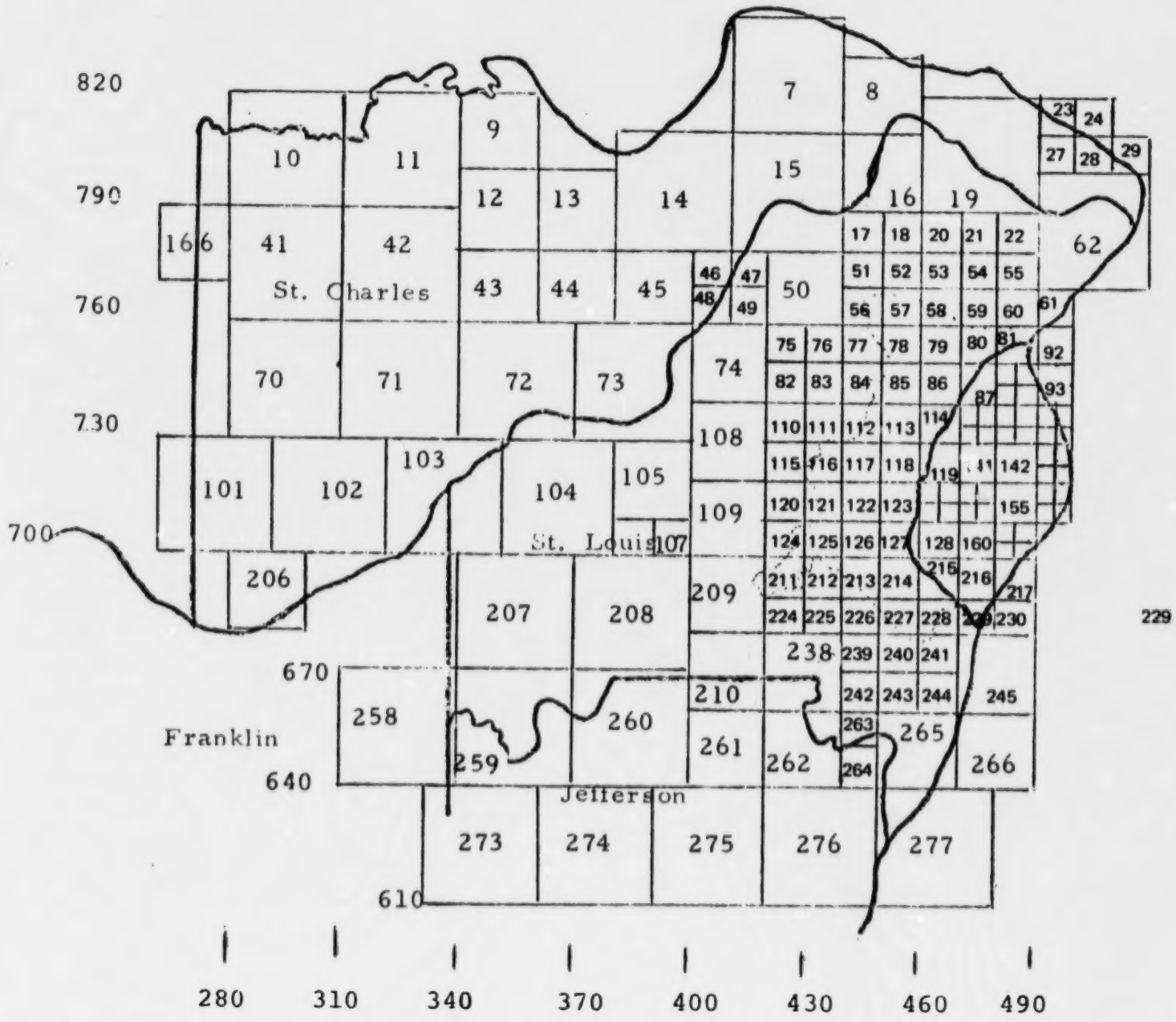
b. The Metropolitan Kansas City Intrastate Air Quality Control Region (094) is illustrated in Figures 4 and 5. The Missouri portion of this region contains Buchanan, Platte, Clay, Ray, Cass and Jackson counties. The region is gridded by UMT coordinates with grid sides of 10, 5, and 2.5km sides, as shown in Figures 4 and 5. Two hundred of these grids are contained wholly or partially

AIR QUALITY CONTROL REGIONS

MISSOURI
NORTHERN MISSOURI INTRASTATE AIR QUALITY CONTROL REGION
METROPOLITAN ST. LOUIS INTERSTATE AIR QUALITY CONTROL REGION (ILL-MO.)
METROPOLITAN KANSAS CITY INTERSTATE AIR QUALITY CONTROL REGION (KAN-MO.)
SOUTHEAST MISSOURI INTRASTATE AIR QUALITY CONTROL REGION
SOUTHWEST MISSOURI INTRASTATE AIR QUALITY CONTROL REGION

Figure 1

Metropolitan St. Louis
Air Quality Control Region
(070)



Sheet 1

Figure 2

Figure 2
3.

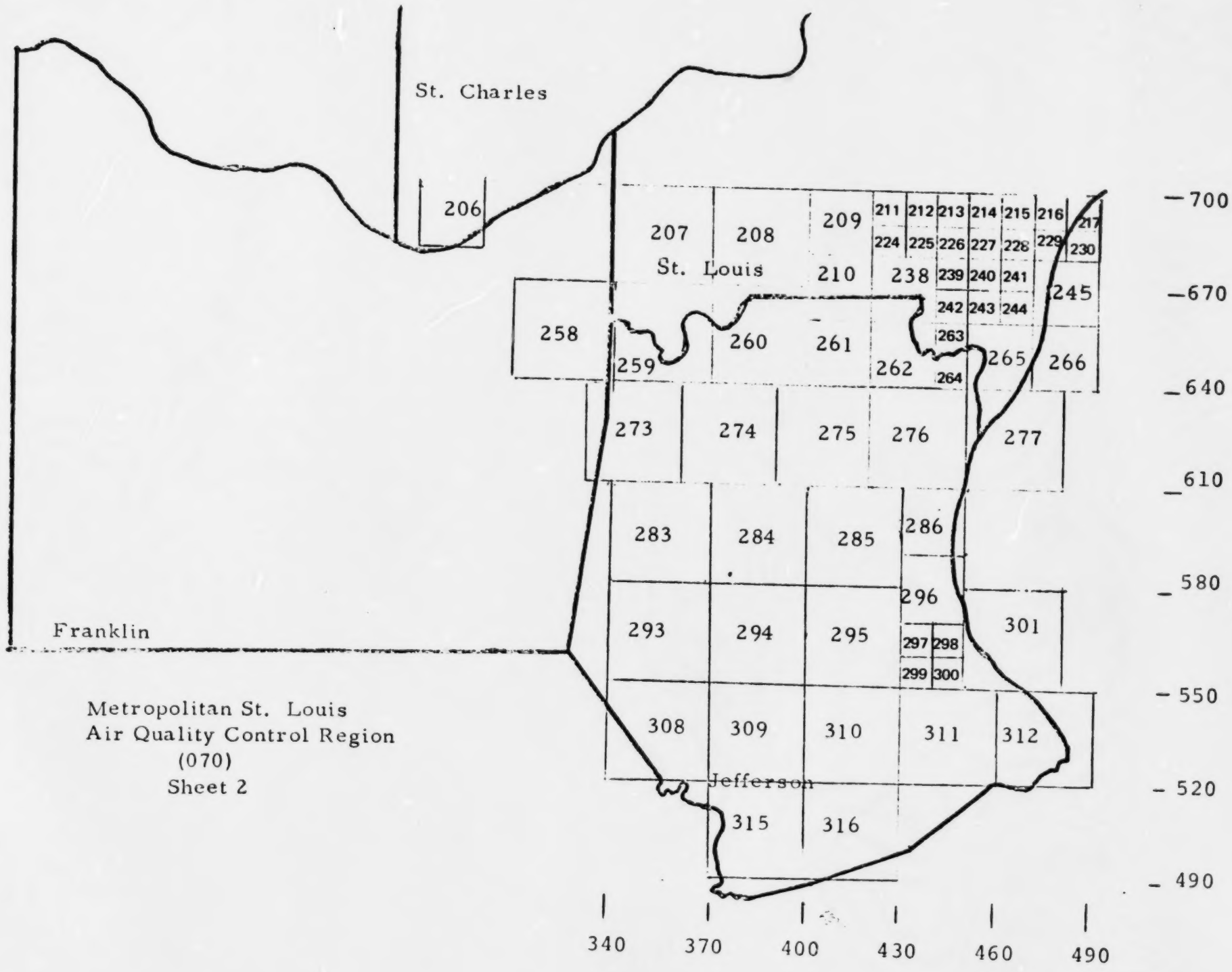


Figure 3
4.

Figure 3

Metropolitan Kansas City
Air Quality Control Region
(021)

Sheet 1

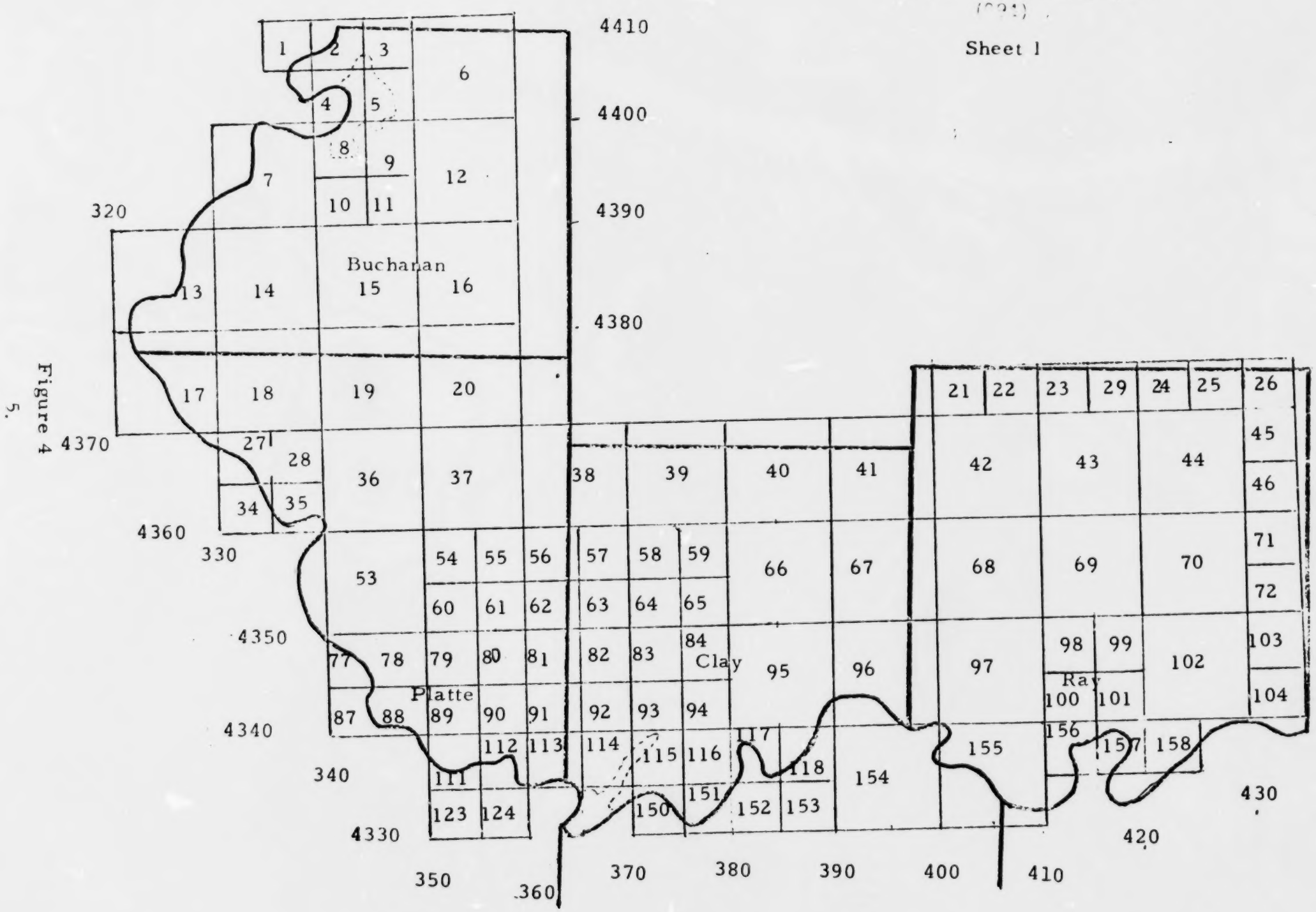
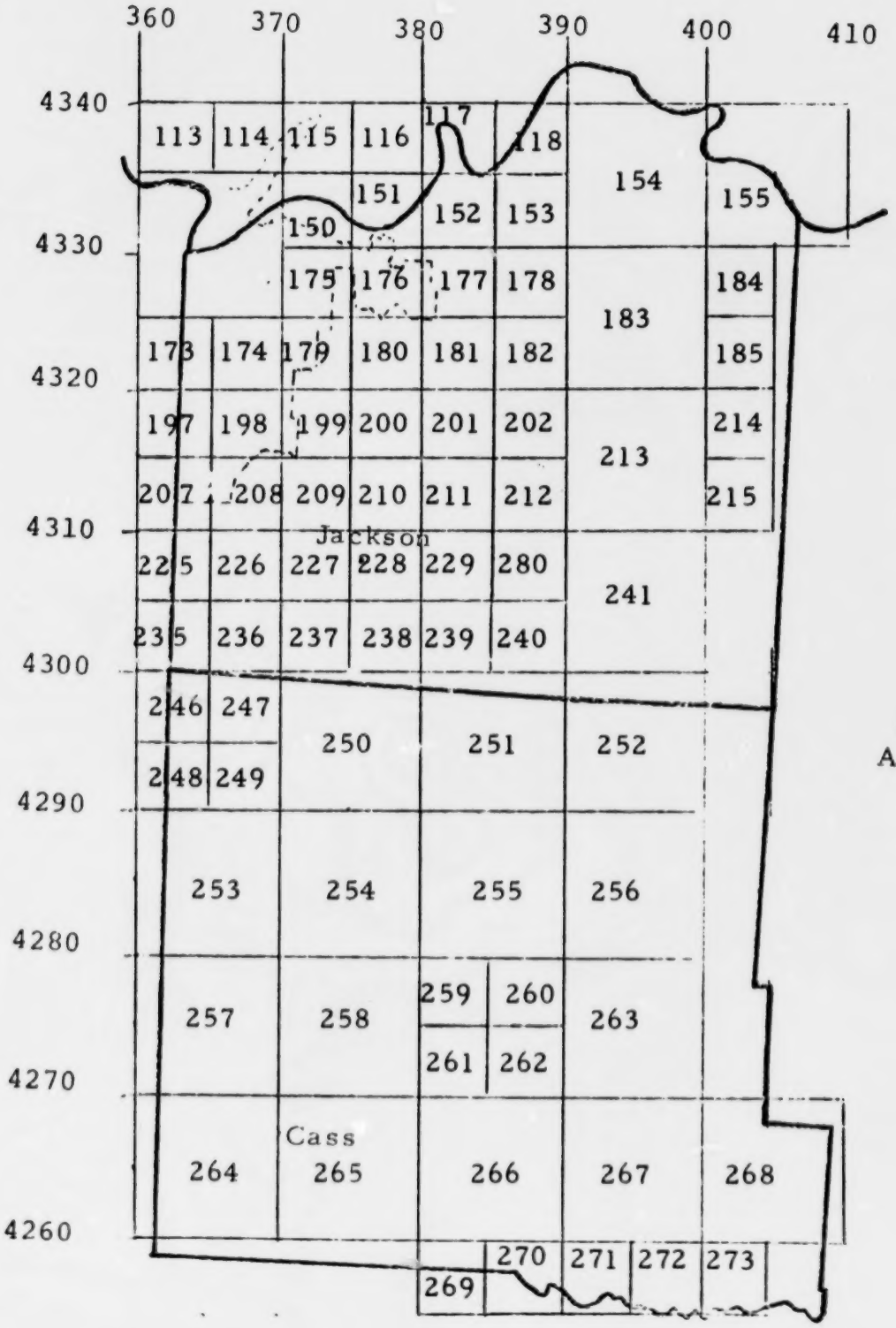


Figure 4

Figure 4
5.



Metropolitan Kansas City
Air Quality Control Region
(094)

Sheet 2

Figure 5

in the State of Missouri. The grid system for the central city is shown in Figure 6. A recent modification to the grid number system is contained in Appendix D.

The three interstate regions are:

a. The Northern Missouri Interstate Air Quality Control Region (137). The region contains the 44 counties indicated in Figure 1 and listed in Table 1.

b. The South East Missouri Interstate Air Quality Control Region (138). This region contains the 24 counties indicated in Figure 1 and listed in Table 2.

c. The South West Missouri Interstate Air Quality Control Region (139). This region contains the 36 counties shown in Figure 1 and listed in Table 3. In addition, GreeneCounty has been subdivided into 64 grids with the UMT and numbering systems illustrated in Figure 7.

KANSAS CITY

CENTRAL CITY AREA

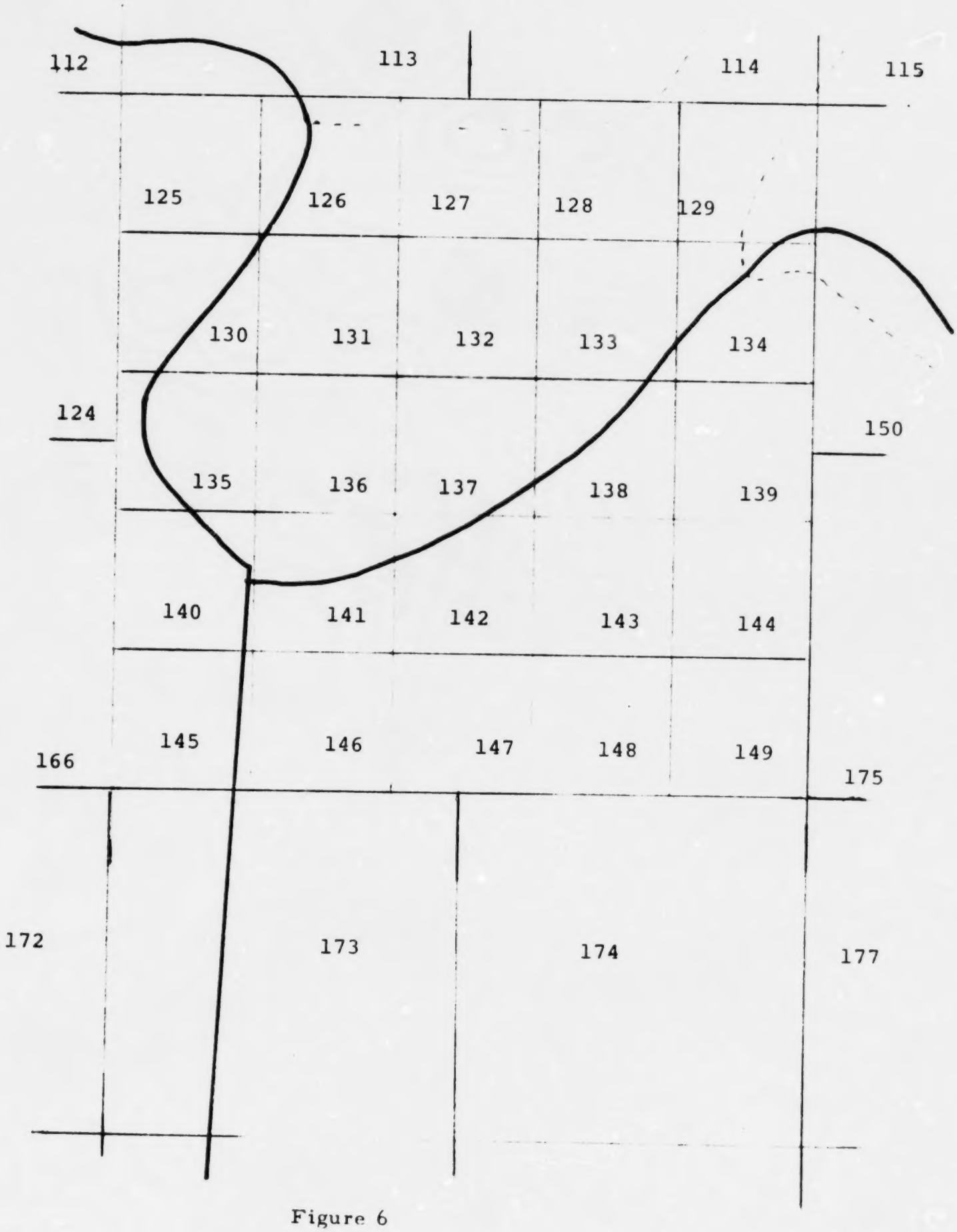


Figure 6

Table 1

Northern Missouri
Intrastate Air Quality Control Region - 137

In the State of Missouri:

1	Adair County
2	Andrew County
3	Atchison County
4	Audrain County
5	Boone County
6	Caldwell County
7	Callaway County
8	Carroll County
9	Chariton County
10	Clark County
11	Clinton County
12	Cole County
13	Cooper County
14	Daviess County
15	De Kalb County
16	Gentry County
17	Grundy County
18	Harrison County
19	Holt County
20	Howard County
21	Knox County
22	Lewis County
23	Lincoln County
24	Linn County
25	Livingston County
26	Macon County
27	Marion County
28	Mercer County
29	Moniteau County
30	Monroe County
31	Montgomery County
32	Nodaway County
33	Osage County
34	Pike County
35	Putnam County
36	Ralls County
37	Randolph County
38	Saline County
39	Schuyler County
40	Scotland County
41	Shelby County
42	Sullivan County
43	Warren County
44	Worth County

Table 2

Southeast Missouri
Air Quality Control Region - 138

In the State of Missouri:

1	Bolinger County
2	Butler County
3	Cape Girardeau County
4	Carter County
5	Crawford County
6	Dent County
7	Dunklin County
8	Gasconade County
9	Iron County
10	Madison County
11	Maries County
12	Mississippi County
13	New Madrid County
14	Pemiscot County
15	Perry County
16	Phelps County
17	Reynolds County
18	Ripley County
19	St. Francois County
20	Ste. Genevieve County
21	Scott County
22	Stoddard County
23	Washington County
24	Wayne County

Table 3

Southwest Missouri
Intrastate Air Quality Control Region - 139

In the State of Missouri:

1	Barry County	19	Lawrence County
2	Barton County	20	McDonald County
3	Bates County	21	Miller County
4	Benton County	22	Morgan County
5	Camden County	23	Newton County
6	Cedar County	24	Oregon County
7	Christian County	25	Ozark County
8	Dade County	26	Pettis County
9	Dallas County	27	Polk County
10	Douglas County	28	Pulaski County
11	Greene County	29	St. Clair County
12	Henry County	30	Shannon County
13	Hickory County	31	Stone County
14	Howell County	32	Taney County
15	Jasper County	33	Texas County
16	Johnson County	34	Vernon County
17	Laclede County	35	Webster County
18	Lafayette County	36	Wright County

Greene nty

Missouri

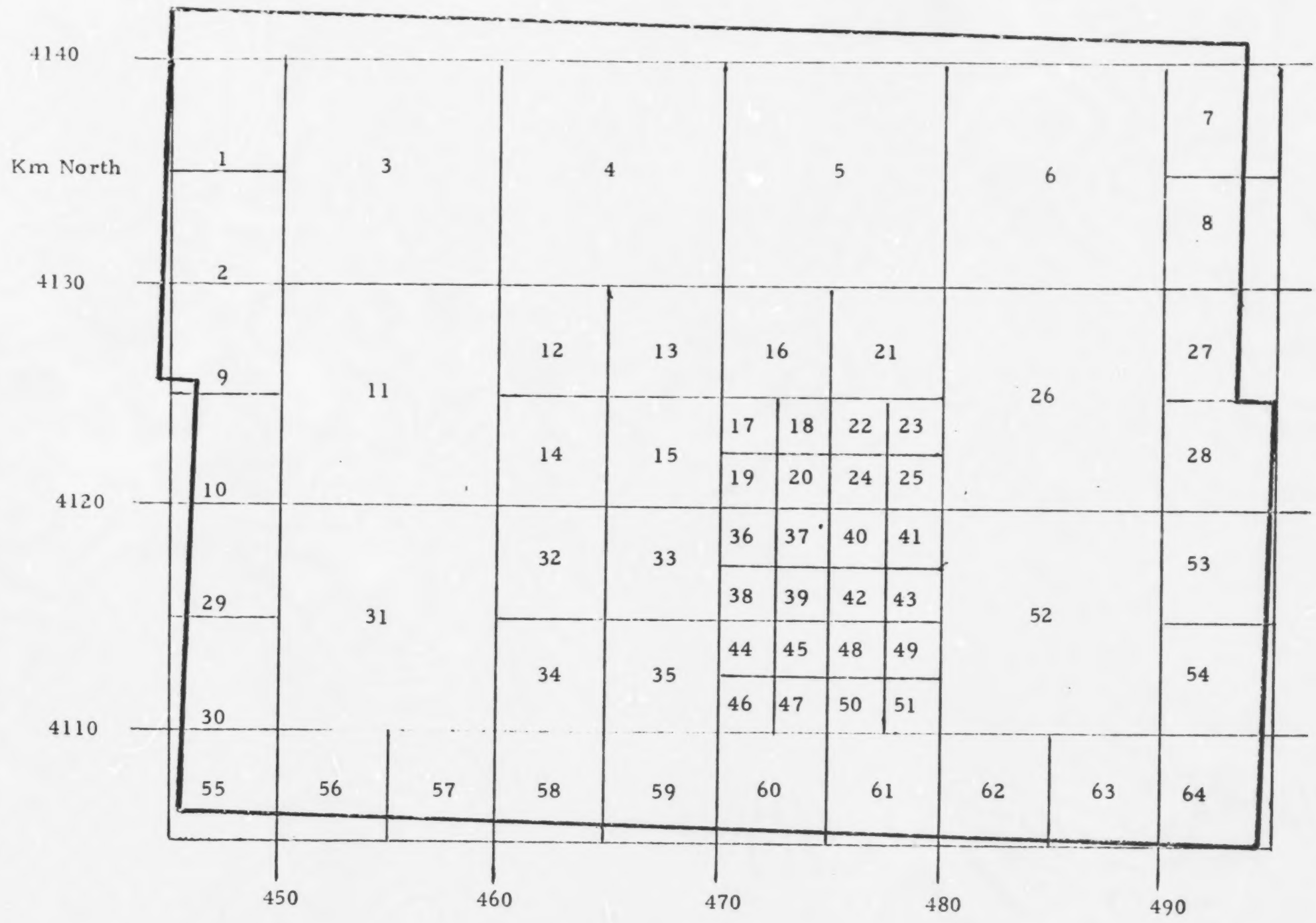


Figure 7

Section 2 - Task Description

The overall purpose of Task Order No. 2 was to provide contract assistance to the Missouri Air Conservation Commission (MACC) in the preparation of a State-wide emission inventory for Missouri which would meet the requirements of the National Ambient Air Quality Standards as published in the Federal Register, Volume 36, Number 67, dated April 7, 1971. Performance consisted of the following tasks:

a. MACC assumed responsibility for the distribution, collection and recontacting for point source questionnaires. In addition, the State agency undertook the task of reducing the information provided in the returned questionnaires to a form suitable for entry on APCO Form 194, Point Source Data Forms. The completed forms were annotated so that IBM could select appropriate emission factors to compute process emissions.

b. With the cooperation of MACC, IBM provided the major effort in collecting data for:

   1) Fuel usage for the State and smaller political jurisdictions.

   2) Refuse disposal by type and amount of disposal.

   This effort reduced to the use of estimates provided

by the EPA Project Engineer when other available sources of data proved inadequate.

3) Developing apportioning factors for distributing emissions among the various counties.

c. The contractor provided estimates of hydrocarbons, carbon monoxide and nitrogen oxides for the gridded areas in the Kansas City and St. Louis AQCR's as well as all five pollutants for the grids in Greene County based on source totals and apportioning factors provided by the State and local agencies.

d. The contractor calculated allowable emissions for all point sources in Regions 137, 138 and 139 in accordance with State Regulations and model regulations as described in Appendix B, National Ambient Air Quality Standards, Federal Register, Volume 36, Number 67, dated April 7, 1971.

e. The contractor developed apportioning factors for distributing area source emissions to counties in Regions 137, 138 and 139, and for distributing emissions from automotive sources to the grids in St. Louis, St. Charles and Jefferson counties of Region 070.

f. The contractor formatted the resultant pollution data in accordance with the requirements in the Federal Register and pursuant to guidelines provided by EPA at the start of the task order.

Section 3 - Methodology

I. Point Sources:

The MACC distributed point source questionnaires to potential polluters identified by State and Local authorities or which meet the requirements of Appendix B to the Federal Register, Volume 36, Number 67, dated April 7, 1971. On receipt, these questionnaires were reviewed and the appropriate data was transferred to APCO Point Source Forms (Appendix A) by the MACC. The completed forms for Regions 137, 138 and 139 were forwarded to IBM for further processing. Subsequently, IBM computed the emissions from process sources and allowable emissions according to State and model regulations. IBM analyzed the forms and transcribed the information to punch cards for computation of combustion source emissions by the APCO Point Source Program.

Point source data for regions 070 and 094 and Greene County were provided on APCO forms in final form by MACC and local authorities. These data were analyzed and, where necessary, amended to be compatible with recently added capabilities of the APCO programs. These changes consisted primarily of separating process and combustion sources and ascertaining that coding conventions were met.

Detailed documentation of the point source information as

produced by the computer were provided to MACC and EPA. Summaries for AQCR's and the State are provided with this report.

Selection of emission factors as required for process sources was made from "Air Pollution Emission Factors, Preliminary Document" by M. J. McGraw and R. L. Duprey, dated April 1971.

In cases where certain air pollution control equipment appeared as a standard part of a process (e.g. the cyclone in alfalfa dehydrating), these control devices were not identified as such in the control device section of the point source data form. It was assumed that the presence of these control devices was accounted for in the emission factors. Maps showing the location of the largest point sources in Greene County and the Kansas City and St. Louis AQCR's are presented in Figures 8, 9, 10,

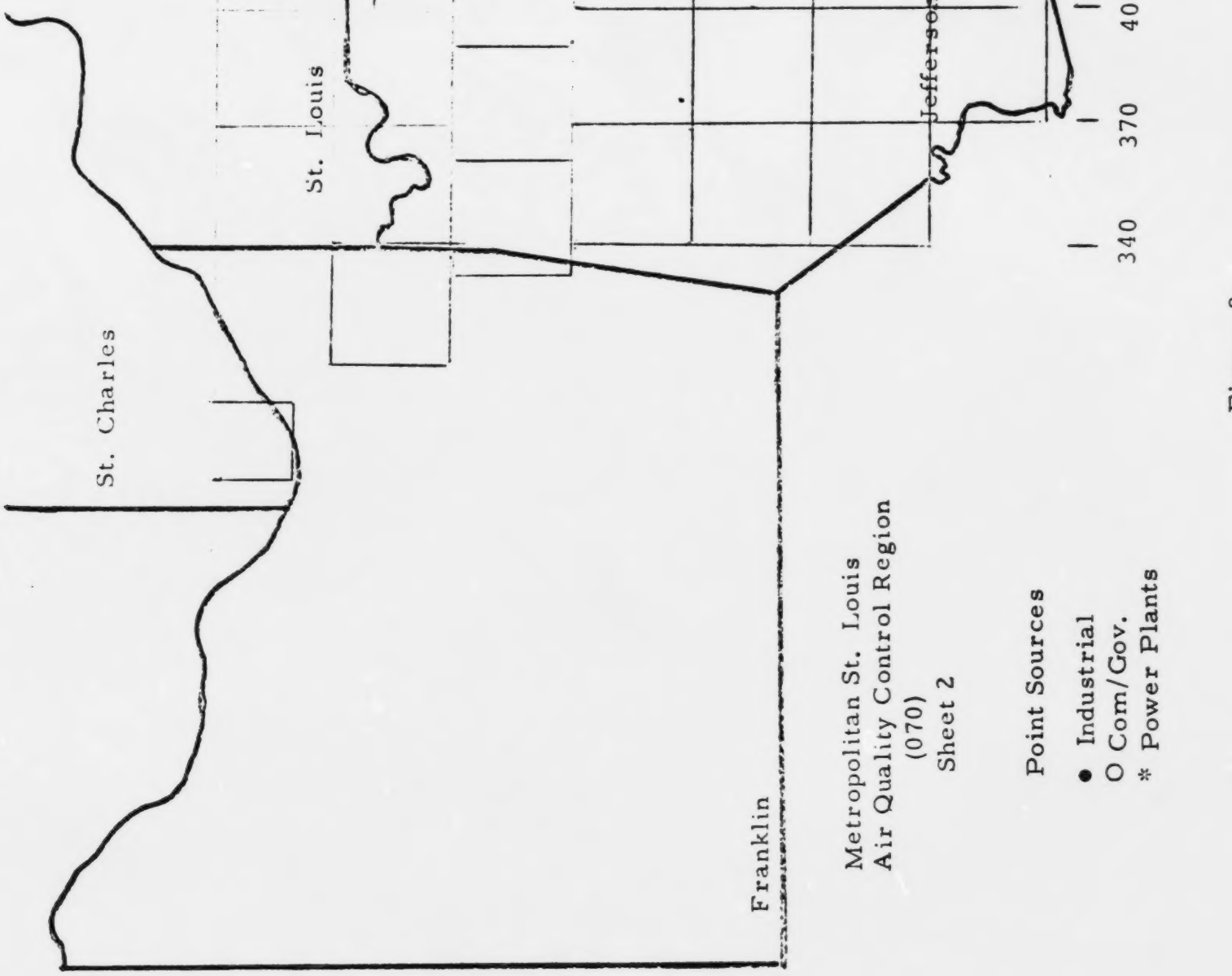
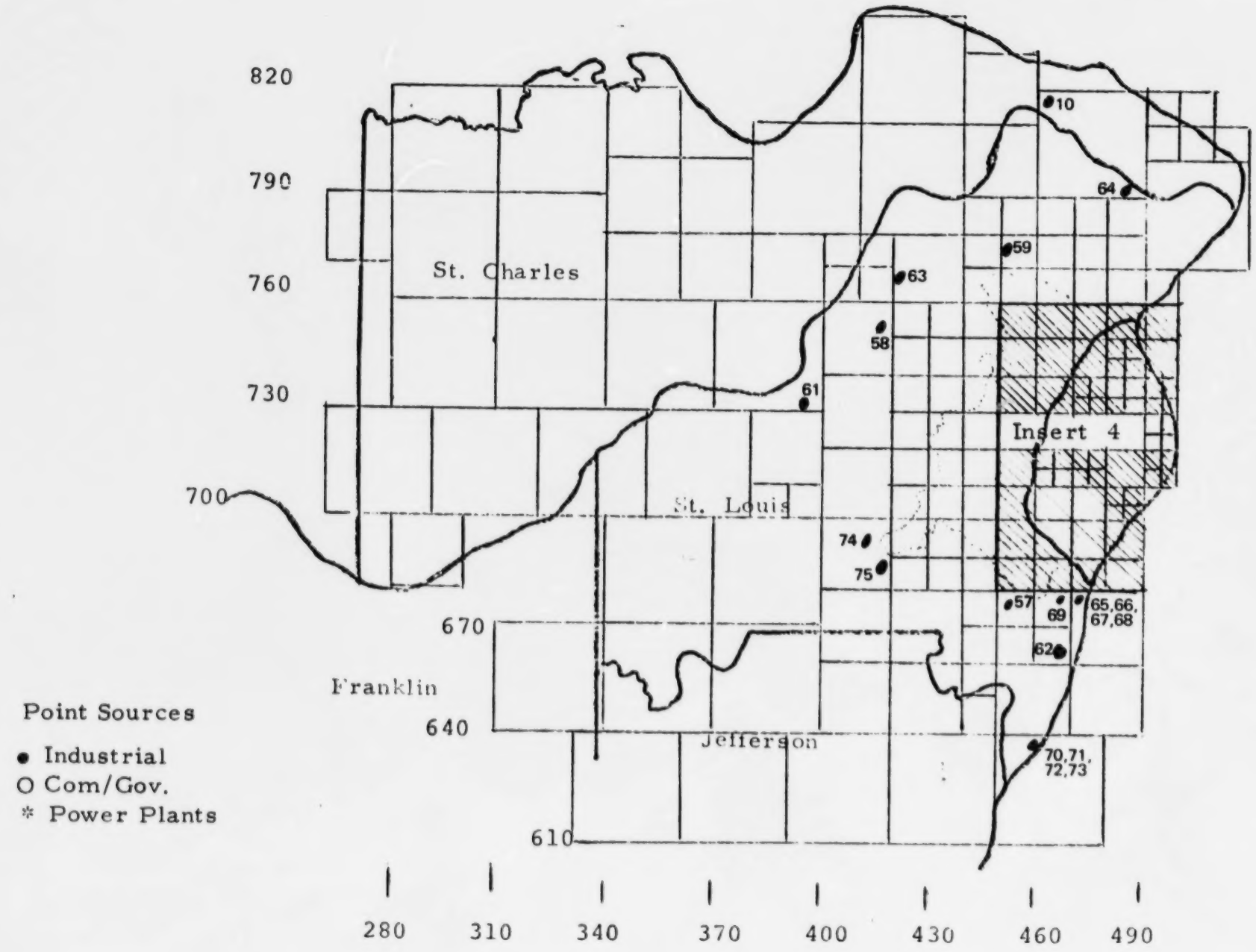

St. Charles
St. Louis
Jefferson
Franklin
700
670
640
610
580
550
520
490
340
370
400
430
460
490
6, 7
1, 5
8, 9
Metropolitan St. Louis
Air Quality Control Region
(070)
Sheet 2
Point Sources
• Industrial
O Com/Gov.
* Power Plants

Figure 8a

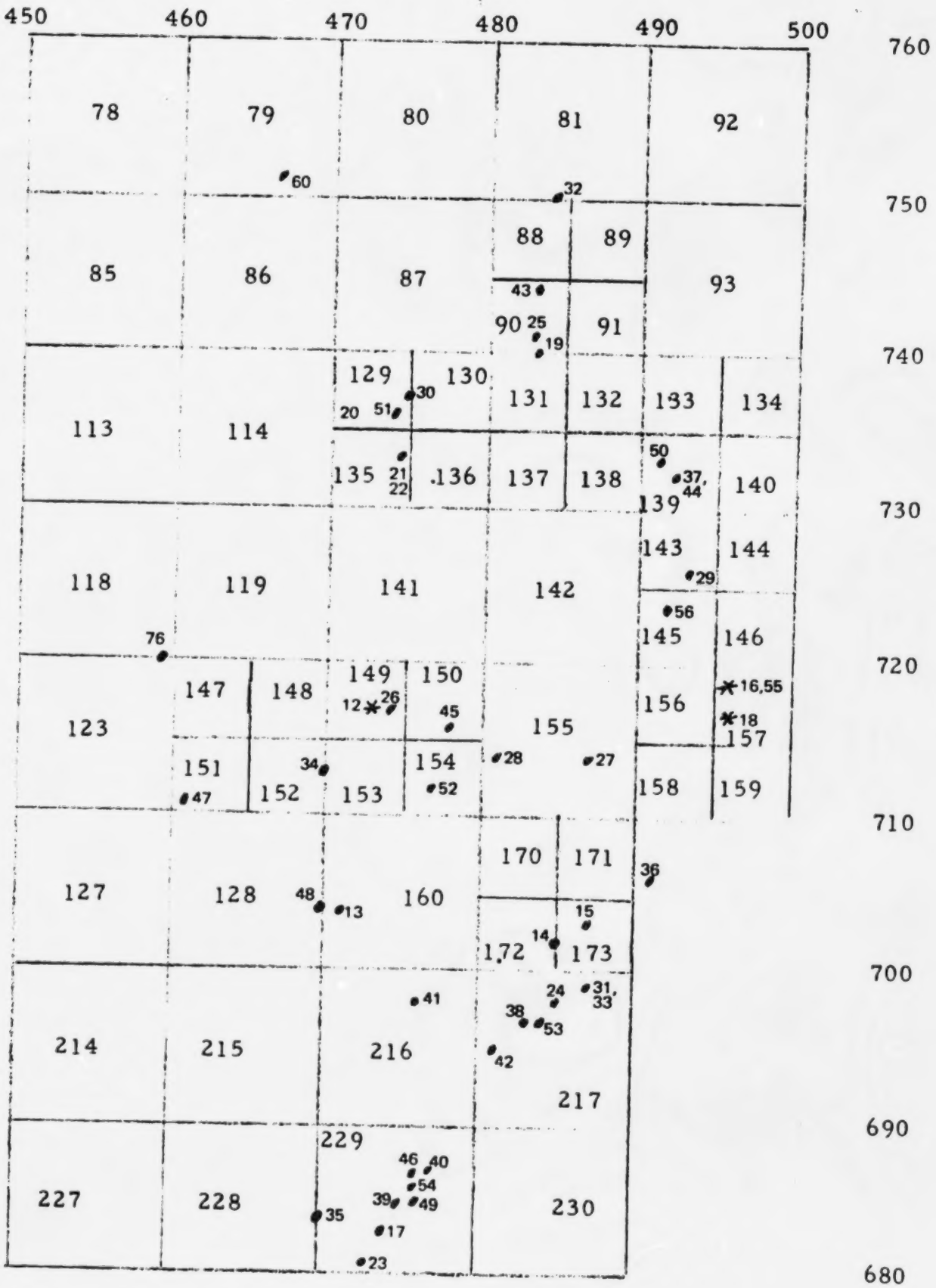
Metropolitan St. Louis
Air Quality Control Region
(070)



Sheet 1
Figure 8b

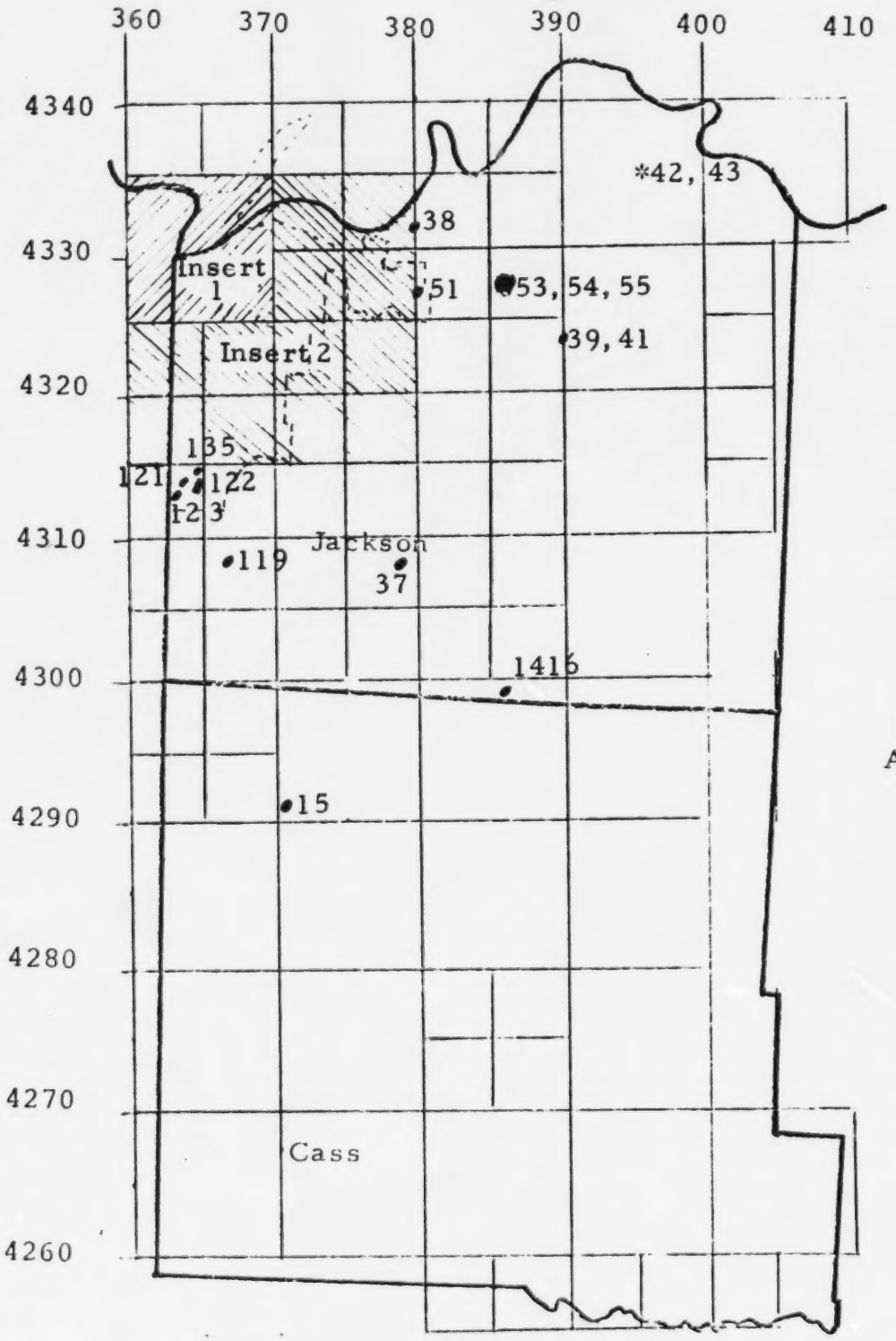
Metropolitan St. Louis

Point Sources



• Industrial
O Com/Gov.
* Power Plants

Figure 8c



Metropolitan Kansas City
Air Quality Control Region
(094)

Sheet 2

Point Sources

- ● Ind.
- O Com/Gov.
- * Power Plant

Figure 9a

Figure 9a 20.

Metropolitan Kansas City
Air Quality Control Region
(091)

Sheet 1

o Industrial
O Com/Gov.
* Power Plants

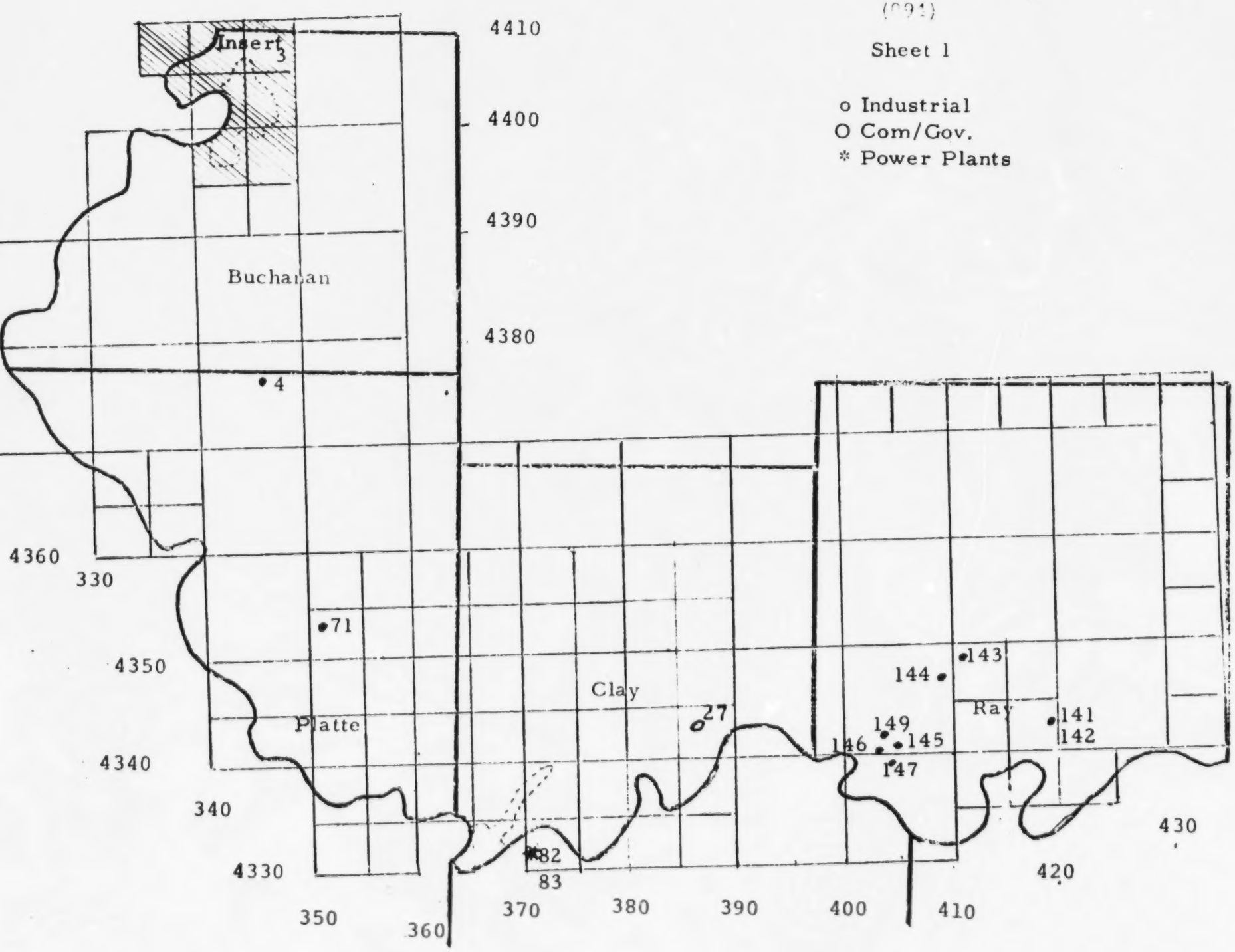


Figure 9b

Figure 9b

KANSAS CITY

CENTRAL CITY AREA

Point Sources

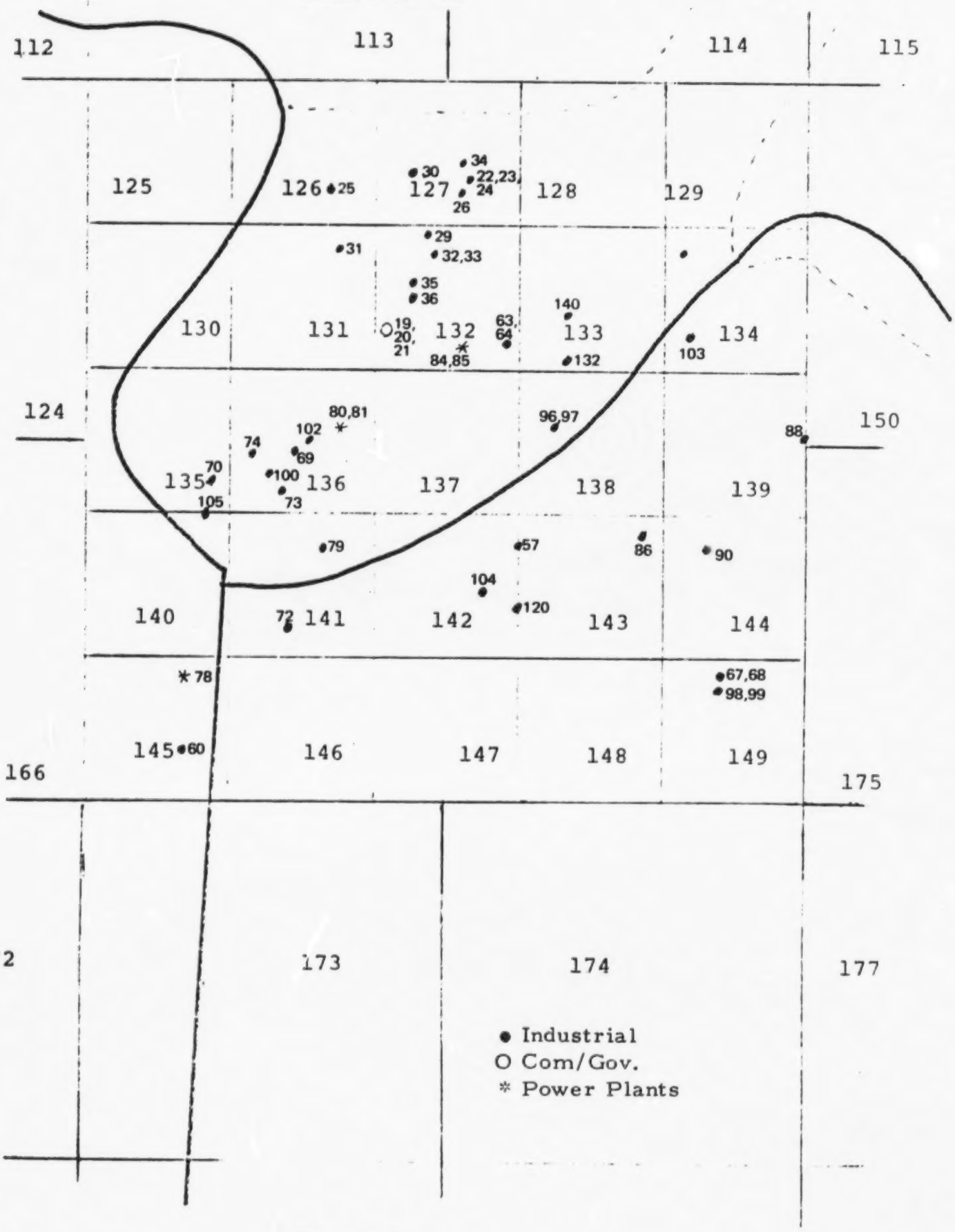
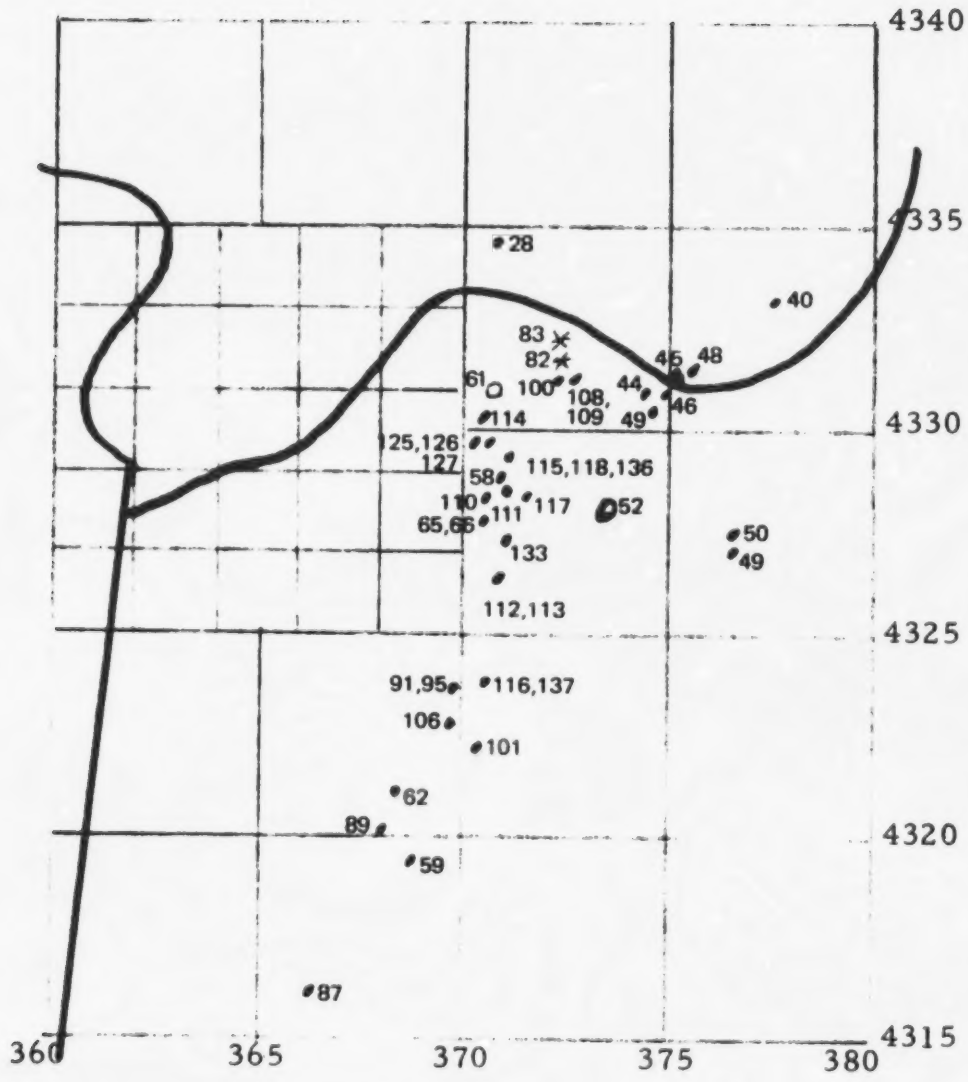


Figure 9c



Kansas City

Surroundings

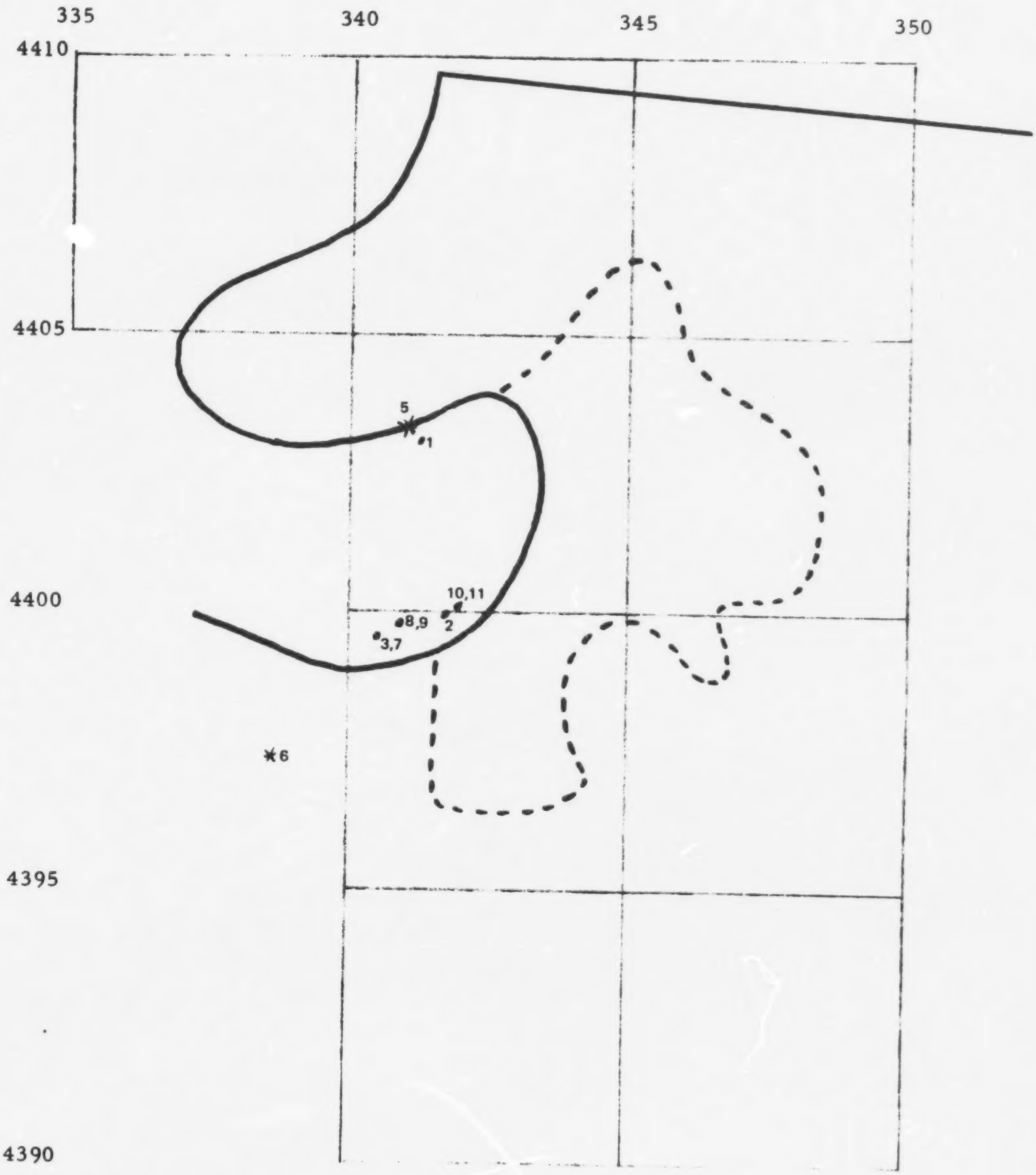
Point Sources

● Industrial

O Com/Gov.

* Power Plants

Figure 9d



• Industrial
O Com/Gov.
* Power Plants

094 - Independence
Point Sources

Figure 9e

Greene County

Missouri

Major Point Sources

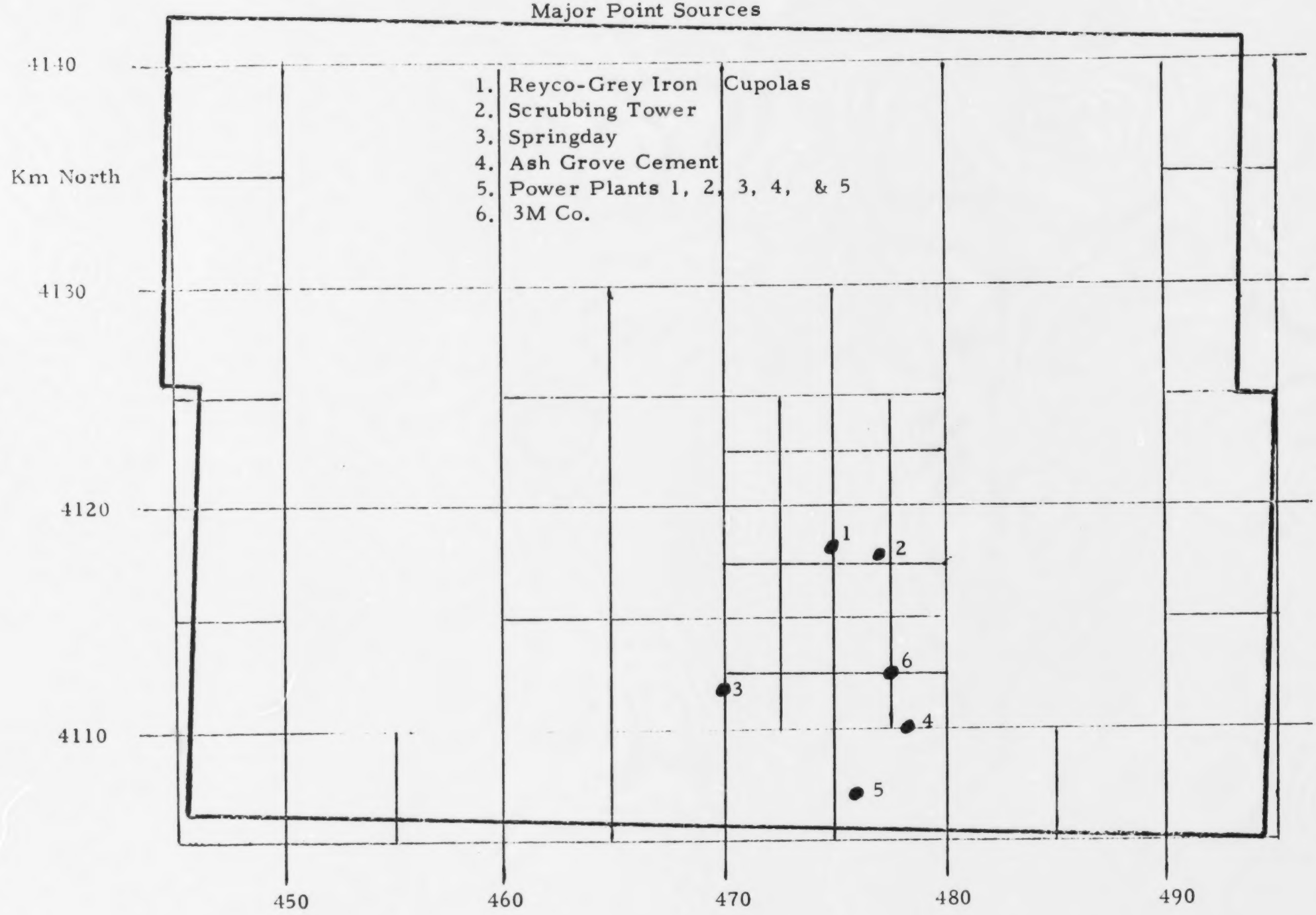


Figure 10

Figure 10 25.

II. Area Sources

Two distinct procedures were used to develop the State emission inventory. The more straightforward was applied to the St. Louis and Kansas City AQCR's and Greene County. Apportioning emissions to grids in these cases was based on factors provided by MACC, county and city Air Pollution Control Agencies or APCO. Source amounts were also provided to the contractor.

The data provided for various portions of the Kansas City Region were sufficiently compatible that standard apportioning factors for each source category for each grid could be developed. These were selected, in collaboration with MACC and the APCO Project Engineer and were as follows:

a. For all fuel combustion sources, grid population was used.

b. For incineration, the estimated incineration of waste disposal per grid was available.

c. For solvent evaporation, grid population was used.

d. For diesel emissions from vessels, estimated fuel usage per grid was used.

e. For railroad emissions, track mileage plus yard fuel usage converted to equivalent track mileage was used for each grid. Equivalent track mileage was computed

from earlier estimates of particulate emissions as

$$N \text{ (inches)} = \frac{A \text{ (tons/yr)}}{B \text{ (tons/yr/in)}}$$

Where N = equivalent yard mileage

A = total annual yard particulate emissions(tons/yr)
B = annual travel emissions per inch

f. For diesel motor emissions, the average daily traffic per grid was used.

g. For automotive emissions, the average daily traffic per grid was used. All traffic was considered to have an average speed of 25 MPH.

h. For auto salvage (entered in Field A-19), the actual disposal in tons/yr. per grid was used.

i. For evaporative losses from gasoline handling, average daily traffic volume per grid was used. Field A-22 was used for the apportioning factor.

j. Grid yearly vehicle miles were determined from traffic count and road length data by multiplying the average daily traffic by the route length by 365. All traffic on interstate, limited access and Federal Highwa outside city limits was considered as 45 mph traffic. (call these results Vmi^{45}). All other traffic was considered as 25 mph (call these results Vmi^{25}).

The county total measured vehicle miles is therefore =

$$\Sigma \text{ VMi}^{45} + \Sigma \text{ VMi}^{25} = \Sigma \text{ VM}$$

The county total vehicle miles as determined above will be greater than Σ VM.

It is assumed that the resulting difference is all 25 mph traffic ($\Sigma \text{ VMe}^{25}$). This resulting 25 mph vehicle mile county total was apportioned to the grids in proportion to the total measured Grid vehicle miles ($\text{VMi}^{45} + \text{VMi}^{25}$).

$$\text{Grid total 25 mph Vehicle miles} = \text{VMi}^{25} + \Sigma \text{ VMe}^{25} \times \frac{\text{VMi}^{45} + \text{VMi}^{25}}{\Sigma \text{ VM}}$$

Grid total 45 mph vehicle miles = VMi^{45}.

Each political jurisdiction of the St. Louis Region was treated separately because the data provided would not permit the definition of universal apportioning factors.

The data for St. Charles and Jefferson counties was provided in terms of population for all fuel combustion and for other sources as follows:

a. Incineration; estimated annual tonnage of solid waste incinerated per grid.

b. Vessel diesel; distribution of sulfur oxide emissions by grid were provided from an earlier study.

c. 25 and 45 MPH automotive emissions; county traffic maps were provided from which average daily vehicle-miles were computed for each grid.

d. Diesel motor emissions; the sum of 25 and 45 MPH average daily vehicle-miles as determined in 'a' above for each grid was used to apportion the given county diesel fuel.

e. Gasoline evaporative losses (entered in Field A-19); the sum of 25 and 45 MPH average daily vehicle-miles for each grid was used.

f. Auto salvage; the estimated annual tonnage as given for each applicable grid was used as the apportioning factor.

The data for St. Louis County was provided in a different form and resulted in the following apportioning factors:

a. All combustion fuels; the estimated consumption for each fuel type in each grid was used as the apportioning factor for the residential and industrial categories. Fuel usage for the commercial/government/institutional category was included as part of industrial usage.

b. Incineration; estimated annual tonnage of solid waste incinerated in each grid was used.

c. All other sources were distributed by apportioning developed as explained for St. Charles and Jefferson Counties.

The data for St. Louis City was provided as pollutant emissions for grids within the city for hydrocarbons, carbon monoxide and nitrogen oxides. These pollutants were specified for the following categories: Auto, Other Mobile, Power and Heating, Small Area Sources, and Total. These emissions were entered in columns 2, 3, 4 and 5 of the Hand Calculated portion of the APCO Area Source forms. Where available, data on particulates and sulfur oxide emissions were distributed to grids in accordance with the nitrogen oxide emissions as provided by St. Louis City.

Area sources for Regions 137, 138 and 139 were generally

treated in accordance with the procedures as specified in "Air Pollutant Emission Inventory Techniques," by P. J. Bierbaum and M. J. Gedgaudas. A description of the methodology, assumptions and data sources used is presented in the following paragraphs. A copy of the Area Source data form is included at the end of this report as Appendix B.

III. Fuel Combustion Sources

The total State consumption of each fuel was apportioned to AQCR's in proportion to the appropriate factor for each fuel category. The AQCR fuel so obtained was then diminished by the amount of fuel identified for each fuel category from point source questionnaires. The remaining fuel was apportioned to counties by the techniques described in the following section.

A. Coal

1) Assumptions:

a) All coal use in Missouri except as specified for Region 070, is industrial.

b) Total Missouri coal usage as specified in the Bureau of Mines publication, "Bituminous Coal and Lignite Distribution," over-estimates coal usage in Missouri because of unaccounted trans-shipments. Thus total Missouri coal is best estimated by converting identified point source usage in the ratio of 1 to 10 provided by MACC.

c) The 1969 county manufacturing employment as provided by MACC is representative of 1970 employment.

2) References and Data Sources:

a) Total 1970 Missouri coal: Bureau of Mines, "Bituminous Coal and Lignite Distribution."

b) Manufacturing Employment:

Census Bureau, "1967 Census of Manufacturers."

3) Apportioning Techniques:

To AQCR's:

a) Coal usage by point sources for each AQCR was summed by user category. Remaining AQCR coal to be distributed as area source is then equal to one tenth of identified point source usage.

b) To counties:

Industrial Coal:

The total AQCR industrial coal was apportioned to the counties in proportion to the number of manufacturing employees per county in 1969.

$$\text{County coal} = \text{AQCR coal} \times \frac{\text{county manu. empl.}}{\text{AQCR manu. empl.}}$$

In those cases where no manufacturing employment was available for a county, a judgement estimate was made. The judgement was based on consideration of 1963 and 1967 census data and

the difference between the total employment provided by MACC and the 1969 extrapolated total manufacturing employment. The residual was divided among unrepresented counties in rough proportion to the number of industrial establishments listedin the 1963, 1967 census of manufacturers for that county. This remainder was small in comparison to the total state manufacturing employment and should, therefore, have little impact on the inventory results.

B. Residual Oil

1) Assumptions

a) All residual oil use is commercial and industrial.

b) Commercial residual oil for heating is equal to the sum of the National Oil Fuel Institute categories of Heating and Military.

c) Industrial residual oil is equal to the sum of the National Oil Fuel Institute categories of Industrial and Utilities.

d) National Fuel Oil Institute residual oil category - "Other" - is considered as input for processes such as asphalt paving.

e) 1970 retail establishment and wholesale establishment data can be obtained through linear extrapolation of the available 1963 and 1967 census data.

f) 1969 fuel oil data is acceptable for use in this study.

2) References and Data Sources:

a) 1969 oil use in Missouri:

The National Oil Fuel Institute, Inc., New York, N. Y.

b) Manufacturing Employment:

Census Bureau, "1967 Census of Manufacturers."

c) Wholesale Establishment Data:

Census Bureau: "1967 Census of Business, Wholesale Trade."

d) Retail Establishment Data:

Census Bureau: "1967 Census of Business, Retail Trade."

3) Apportioning Techniques

a) To Counties:

Industrial Residual Oil:

AQCR industrial residual oil remaining after subtractions of the point source use is apportioned to counties in the same manner as state coal.

Commercial Government Residual Oil:

AQCR Commercial-Government residual oil

after subtraction of point source usage, is apportioned to the counties in the same proportion to the sum of the 1970 retail and wholesale establishments in the county. The 1970 estimates were obtained by linear extrapolation from the 1963-67 Census of Business, Retail and Wholesale.

C. Distillate Oil

1) Assumptions:

a) 1960 census of housing data is reasonable to use for determination of the number of housing units using oil for heating within each county.

b) Commercial, government, residential distillate oil (CGR oil) is equal to the sum of the National Oil Fuel Institute Distillate oil and Kerosene categories of Heating, Military and Other less state diesel.

c) Residential distillate oil is equal to:

$$O_R = H_{60} \times F \times D \times \frac{R}{5.0}$$

where

H_{60} = number of houses in 1960 using oil for space heating

F = 0.18 gals/deg-day/average house

D = State annual average (1969-70) number of degree days.

R = State average number of rooms per house.

d) Commercial/Government distillate oil equals CGR oil minus residential oil.

e) Same as assumptions (f) and (g) for residual fuel oil.

2) References and Data Sources:

a) All references as itemized for residual oil.

b) "1970 Census of Housing, Advanced Report," Census Bureau.

c) "1960 Census of Housing, Occupancy characteristics, Heating Equipment and Type of Fuel for Counties," Census Bureau.

d) "Climatological Data for Missouri," Environmental Data Service, NOAA.

3) Apportioning Techniques

a) To Counties

Industrial Distillate Oil:

The remaining AQCR industrial distillate oil after subtraction of point source use is apportioned to the counties in proportion to the 1969 manufacturing employment in the counties.

Residential Distillate Oil:

The apportioning factor for distributing AQCR

residential distillate fuel oil to counties was the 1960 proportion of houses using oil for space heating.

Commercial Government Distillate Oil:

The Commercial Government distillate oil is apportioned in the same manner as the commercial government residual oil, i.e., in proportion to the sum of the wholesale and retail establishments in the county. The total available commercial government distillate oil is equal to the total CGR distillate oil less the state residential oil and the CG point source distillate oil.

D. Natural Gas

1) Assumptions:

a) The number of housing units using natural gas was taken directly from the 1960 census of housing data plus the increase in dwelling units from 1960 to 1970.

b) LP gas used in Missouri was converted to equivalent natural gas using a factor of one gallon LP gas as equal to 350 cubic feet of natural gas. This factor was determined from the emission factors for natural and LP gas and use of the factor will equalize the resultant emissions. The number of housing units using natural gas was therefore increased by the number

of housing units using LP gas. The designation natural gas used herein means natural gas plus LP gas.

c) 1969 LP Gas amounts are used to represent 1970 data.

2) References and Data Sources:

a) 1970 natural gas use data was obtained directly from the utilities.

b) 1969 natural gas use data was obtained from "Gas Facts, 1970."

c) All Census Bureau documents required for distillate oil data are also required for natural gas.

d) "1969 LP Gas Market Facts," published by the LP Gas Association, Chicago, Illinois.

3) Apportioning Techniques:

a) To counties:

The total AQCR LP gas useage was divided into the categories of Residential, Commercial and Industrial in proportion to the AQCR sum of county factors. The category "Other" was grouped with commercial for this purpose. Total equivalent natural gas for each AQCR is the sum of AQCR LP gas (converted to cu ft.) and natural

gas consumption as reported by utilities.

Residential Natural Gas

Residential natural gas was apportioned to the counties in proportion to the number of housing units in the county using natural gas (and LP gas) in accordance with the 1960 census, plus the difference between the 1960 and 1970 census housing.

$$\text{Residential natural gas county} = \text{Residential natural gas AQCR} \times \frac{\text{d.u.'s using N.G. County}}{\text{d.u.'s using N. G. AQCR}}$$

Commercial-Government Natural Gas

AQCR Commercial-Government (CG) Natural Gas was apportioned to the counties after subtraction of the identified commercial-government point source natural gas useage in proportion to the sum of the wholesale and retail establishments in the county.

$$\text{County CG Natural Gas} = \text{AQCR CG Nat. Gas} \times \frac{\text{wholesale \& retail county}}{\text{wholesale \& retail AQCR}}$$

where AQCR means Regions 137, 138 or 139.

Industrial Natural Gas

AQCR industrial equivalent natural gas was

apportioned to the counties after subtraction of the identified industrial point source natural gas useage in proportion to the manufacturing employment in the county in the same manner as was done for industrial residual oil.

IV. Evaporative Sources

A. Gasoline Marketing

1) Assumptions

a) There are approximately equal numbers of splash and submerged fill gasoline storage tanks used in thegasoline service stations in Missouri.

b) Gasoline marketing evaporative losses in an area are proportional to the automobile travel within that area.

c) The internal combustion category for LP gas in gallons can be combined with gasoline on a 1 to 1 basis. Thus gasoline hereafter refers to gasoline plus LP in the internal combustion category.

2) References and Data Sources

a) Total gasoline used within the state from the Missouri State Government tax records.

b) "State of Missouri Annual Motor Vehicle Report 1970," as published by the State Government.

3) Apportioning Techniques

a) To AQCR's:

The total gasoline sold in the State of Missouri

was apportioned to the AQCR in proportion to the sum of the total vehicle miles reported for each county within the AQCR.

b) To counties:

The total gasoline sold in an AQCR was apportioned to the counties in proportion to the yearly vehicle miles driven in that area as reported by the Missouri State Road Commission. The evaporation losses from gasoline marketing are reported in Field A-19, Other, of the APCO forms.

B. Dry Cleaning

1) Assumptions

a) The amount of dry cleaning evaporative losses is directly proportional to the amount of clothes cleaned, which is proportional to the population in an area.

b) The factor of 2.3 pounds of emission per capita per year for dry cleaning is appropriate for use in Missouri.

2) References and Data Sources:

a) "1970 Census of Population, Advanced Report," Census Bureau.

b) "1970 Census of Population and Housing, Advanced Report for Missouri.

3) Apportioning Techniques

a) To counties:

The total amount of dry cleaning fluid evaporation was determined by using the factors of 2.3 pounds per capita per year given on page 36 of "Air Pollution Emission Factors, Preliminary Document," by M. J. McGraw and R. L. Duprey. This total evaporative loss was apportioned from AQCR to the counties in proportion to the population of the county.

$$\text{County Dry Cleaning Evaporative Loss} = \text{State Evaporative Loss} \times \frac{\text{County Pop.}}{\text{AQCR Pop.}}$$

V. Mobile Sources

A. Automobile Emissions

1) Assumptions

a) Automotive emissions are proportional to the gasoline used, which is proportional to the vehicle miles driven with an area.

b) On the average an automobile travels 12.5 miles per gallon of gasoline consumed.

c) 45 mph and 25 mph traffic is proportional to the county traffic volume.

2) References and Data Sources.

a) 1970 gasoline sales as provided by the Missouri State Highway Department.

b) State of Missouri Annual Motor Vehicle Report, Total Daily Vehicle Miles of Travel on the State Highway System, 1969.

c) "1970 Census of Population, Advanced Report," Census Bureau.

d) Road Maps for the State and Counties of Missouri.

3) Apportioning Techniques

a) To counties:

Total vehicle miles driven within the state was

determined by multiplying the gasoline sales by an average of 12.5 vehicle miles per gallon of gasoline. This total vehicle miles data was apportioned to the counties in proportion to the total daily vehicle miles in the county.

$$\text{County Vehicle Miles} = \text{AQCR Vehicle Miles} \times \frac{\text{County Vehicle miles}}{\text{AQCR Vehicle miles}}$$

Prior to distribution, AQCR vehicle mileswere divided into 25 and 45 mph vehicle miles in proportion to the urban and rural average daily vehicle miles reported as a State average.

B. Diesel Road Vehicles

1) Assumptions

a) The total diesel fuel used in the state is provided by the State of Missouri, Highway Department.

b) Diesel fuel use in proportional to total county motor vehicle miles.

2) References and Data Sources:

References are the same as for automobile emission calculations.

3) Apportioning Techniques

a) To counties:

State diesel fuel is apportioned to the counties in proportion to the county vehicle miles in the county in the same manner as state automobile vehicle miles were apportioned to the counties.

C. Railroad

1) Assumptions

a) Railroad distillate oil use is proportional to the track mileage within an area.

2) References and Data Sources

a) Railroad distillate and residual oil use for 1969 from the National Oil Fuel Institute, Inc., New York, N. Y.

b) Missouri railroad mileage data from Twenty-Fourth Annual Report of the Proceedings and Decisions of the Missouri State Tax Commission, December 31, 1969, Tax Table XIX.

3) Apportioning Techniques

a) To counties:

Railroad Distillate Oil

Railroad distillate oil use was apportioned to

the counties in proportion to the active track mileage in that county.

County Railroad distillate oil = AQCR Railroad Distillate Oil X $\frac{\text{County track length}}{\text{AQCR track length}}$

D. Vessels

1) Assumptions

Vessel fuel use is proportional to the Missouri and Mississippi River length bordering the State. River traffic is fairly constant with location along the rivers.

2) References and Data Sources

a) Vessel distillate oil use from the National Oil Fuel Institute, New York, N. Y.

b) Mississippi and Missouri River length from maps obtained at the Coast and Geodetic Survey.

3) Apportioning Techniques

a) To counties:

Vessel distillate oil was apportioned to the counties in proportion to the length of the Missouri and Mississippi Rivers bordering the county.

Thus: (Co) VDO= (AQCR) VDO x $\frac{\text{(Co) RL}}{\text{(AQCR) RL}}$

Where: (Co) VDO = County Vessel Distillate Oil
(AQCR) VDO = AQCR Vessel Distillate Oil
(Co) RL = County River Length
(AQCR) RL = AQCR River Length

E. Aircraft

1) Assumptions

The following assumptions were made to account for the total number of flights from Missouri Airports.

a) Use of Airline Guide data as provided.

b) Only airports with 4000 or more operating cycles per day are considered.

c) Operations in excess of those reported in the Airline Guide are distributed as follows:

1) 2% are unscheduled commercial operations equally divided between 2 engine turboprops and 2 engine turbojets.

2) Of the remaining, 8% are single engine piston and 15% are twin engine piston.

2) References and Data sources

a) Airline Guide

b) Missouri Airport Plan, December 1969

3) Apportioning Techniques

Pollutants for airports were hand calculated, and assigned directly to appropriate counties.

VI. Open Burning

A. Domestic Wastes

1) Assumptions

a) 6.25% of all generated domestic wastes is open burned. This factor can be applied to the State.

2) References and Data Sources

a) Refuse amounts and burned factors from a special study, portions of which were provided to IBM by the EPA Project Engineer.

b) Population data from the "Census of Population, Advanced Report," Census Bureau.

3) Apportioning Techniques

a) To counties:

Total refuse burned in the state was determined as follows:

Total State Refuse burned = State Population X Generation Factor X .0625.

This total was apportioned to AQCR's and thence to the counties in proportion to the population of the counties.

$$\text{County refuse burned} = \text{AQCR refuse burned} \times \frac{\text{County Population}}{\text{AQCR Population}}$$

Section 4 - Missouri Emission Inventory Data

The data resultant from the analyses performed during this study are presented in the following pages in two forms: pie charts and tables. The pie charts present a visual summary of the most important aspects of the collected data. The tabulations provide the detailed results.

The following fuel parameters were used in the calculation of the emitted pollutant amounts. They were determined by review of the data provided in some of the point source forms. The average value for each area was used where no specific data was available.

Fuel Parameters

Region	Bituminous Coal		Sulfur Content		
	% Ash	% Sulfur	Fuel Oil		
			Residual	Distillate	Nat. Gas
070	9.4	2.8	1.6	0.24	0.0001
094	9.0	3.3	1.6	0.24	0.0001
137	10.9	3.15	1.6	0.30	0.0001
138	9.0	2.40	1.6	0.30	0.0001
139	25.9	5.80	1.6	0.30	0.0001

Heat Content

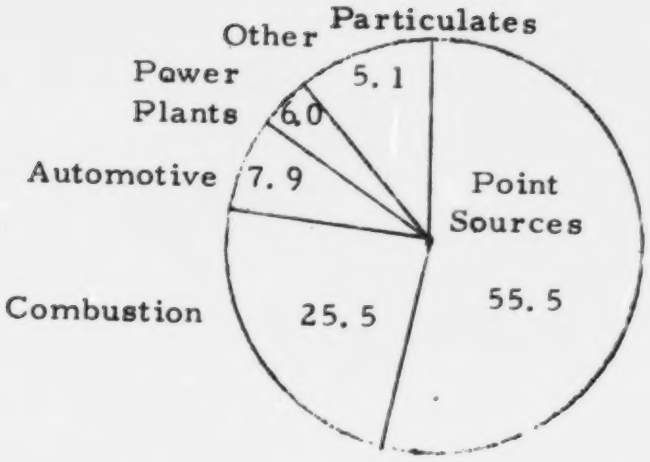
Bituminous Coal	22.3×10^6 BUT/ton
Residual Oil	150×10^6 BTU/1000 gals.
Distillate Oil	140×10^6 BTU/1000 gals.
Natural Gas	1050 BTU/cu. ft.
LP Gas	308×10^3 BTU/gal.

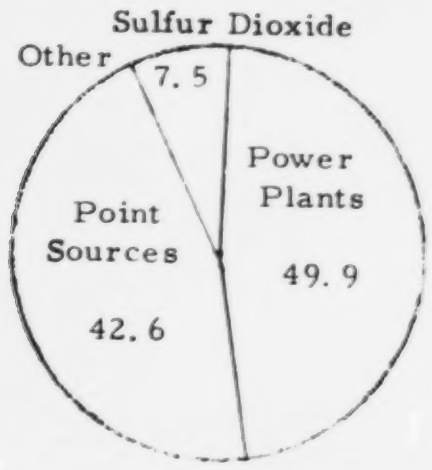
POLLUTANT SUMMARY
Tons per year

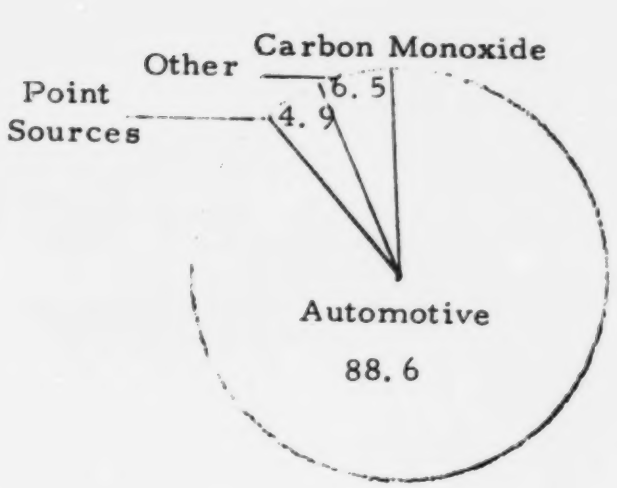
070

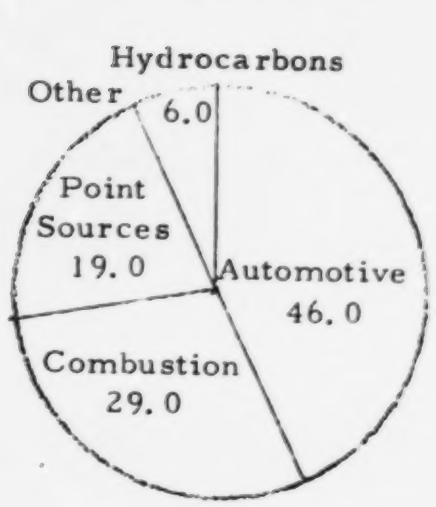
METROPOLITAN ST. LOUIS

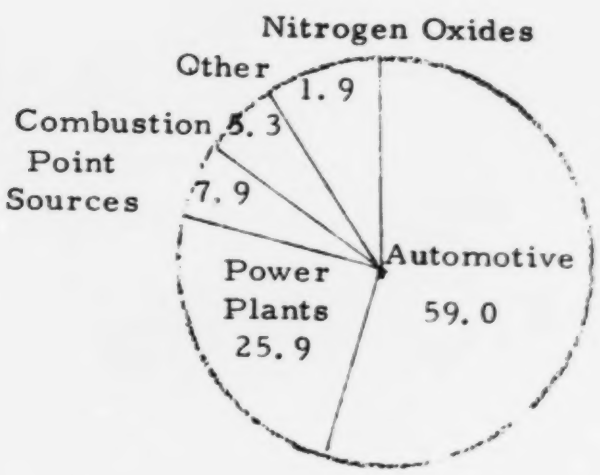
AIR QUALITY CONTROL REGION











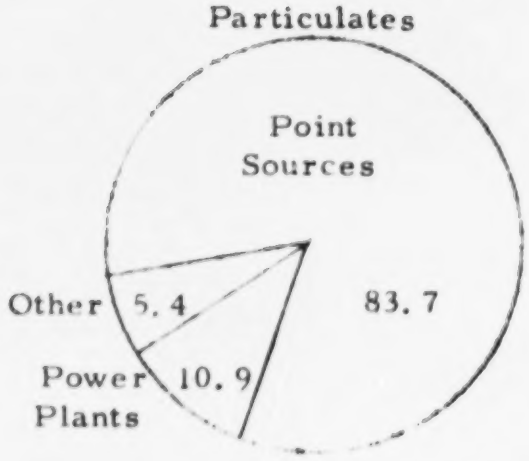
POLLUTANT SUMMARY
Tons per year

094

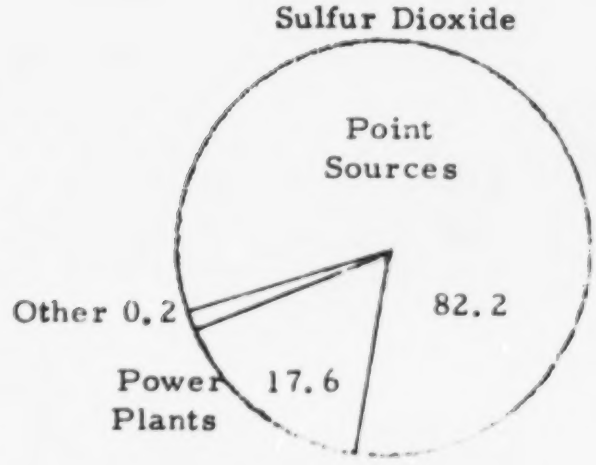
METROPOLITAN KANSAS CITY INTERSTATE

AIR QUALITY CONTROL REGION

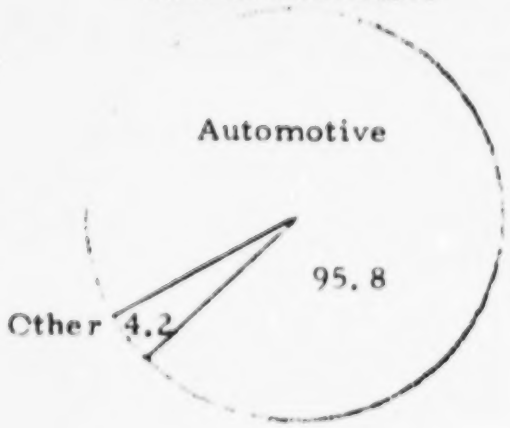
Particulates



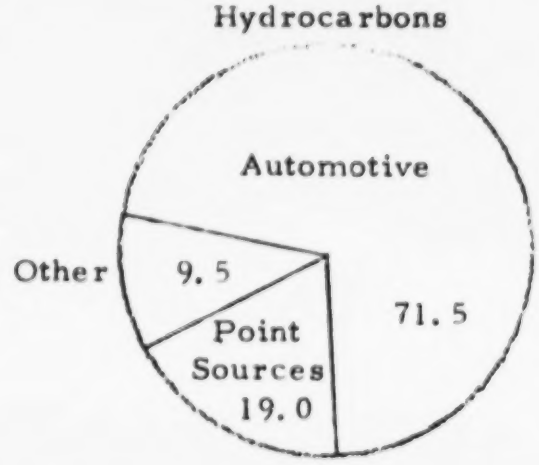
Sulfur Dioxide



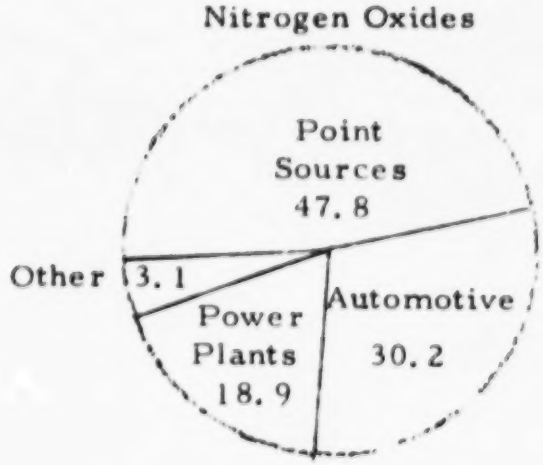
Carbon Monoxide



Hydrocarbons



Nitrogen Oxides

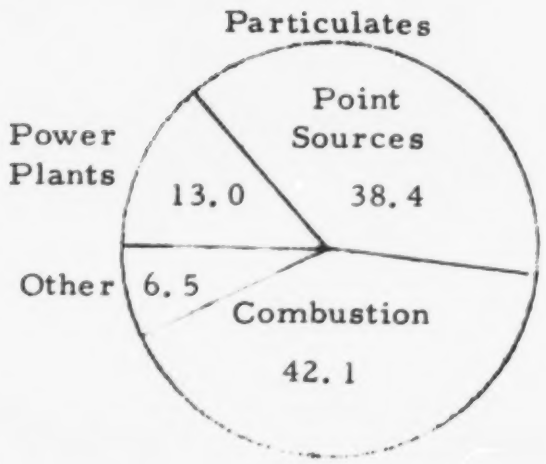


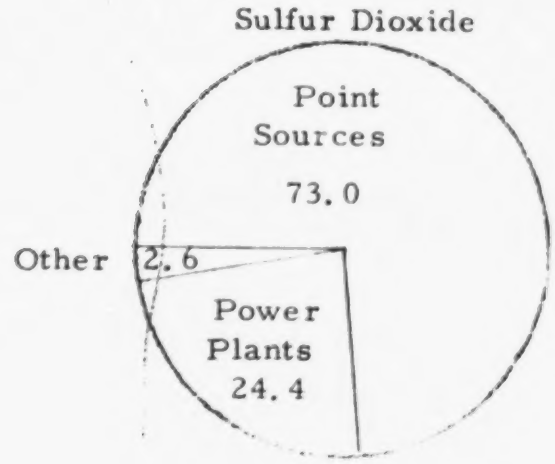
POLLUTANT SUMMARY
Tons per year

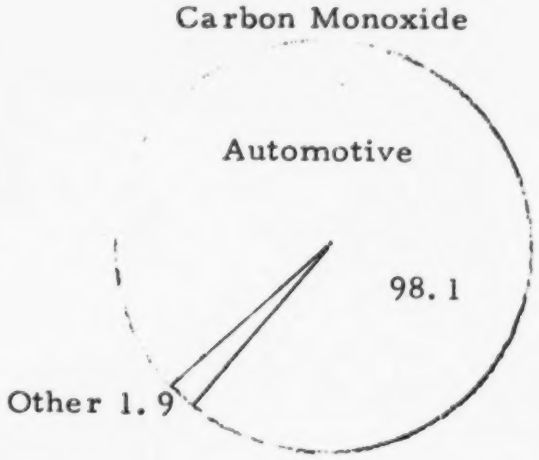
137

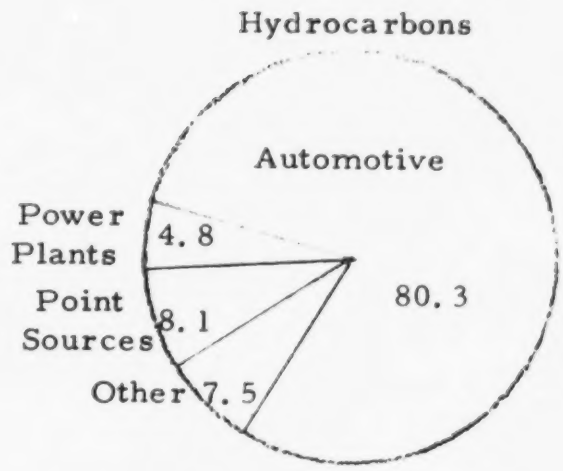
NORTHERN MISSOURI INTRASTATE

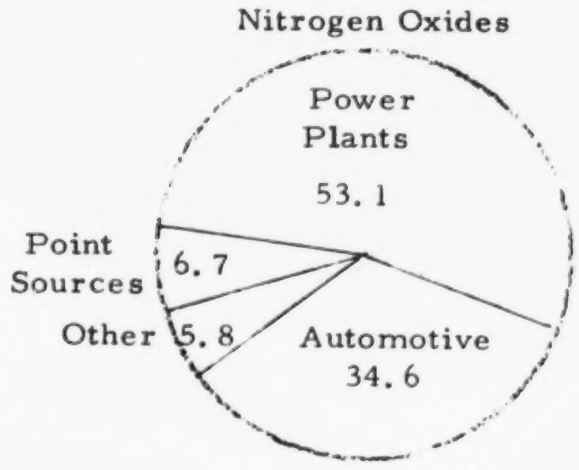
AIR QUALITY CONTROL REGION









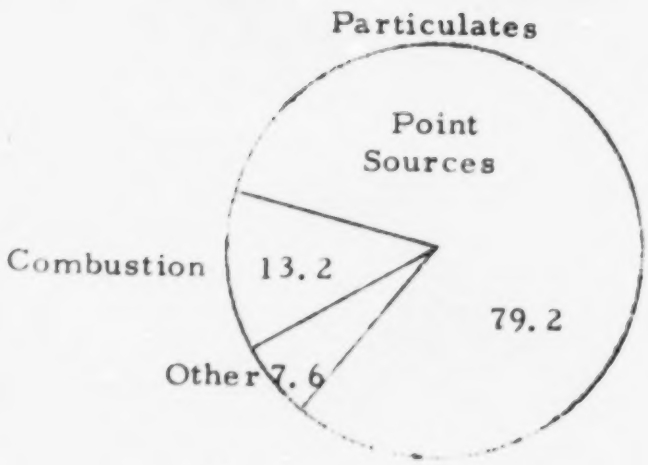


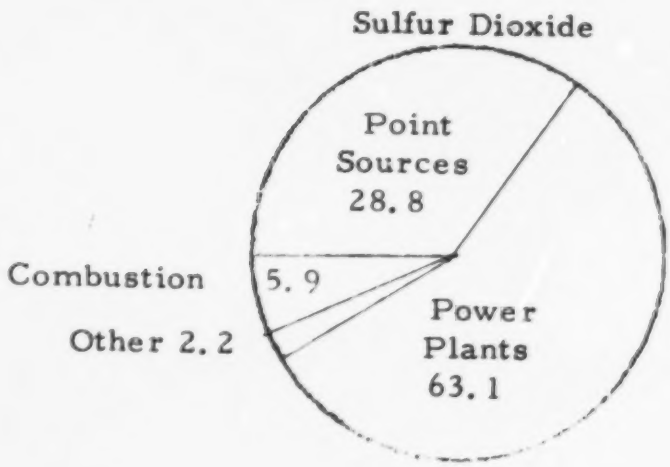
POLLUTANT SUMMARY
Tons per year

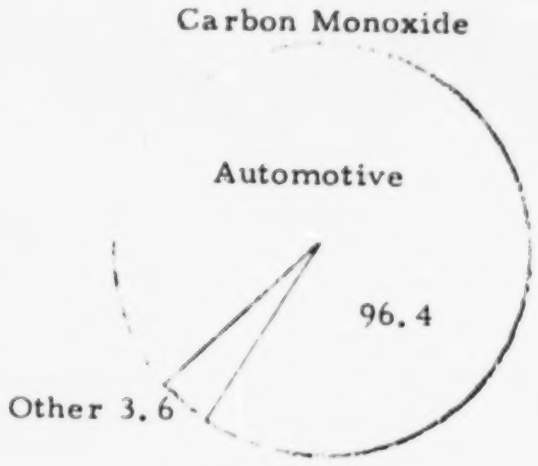
138

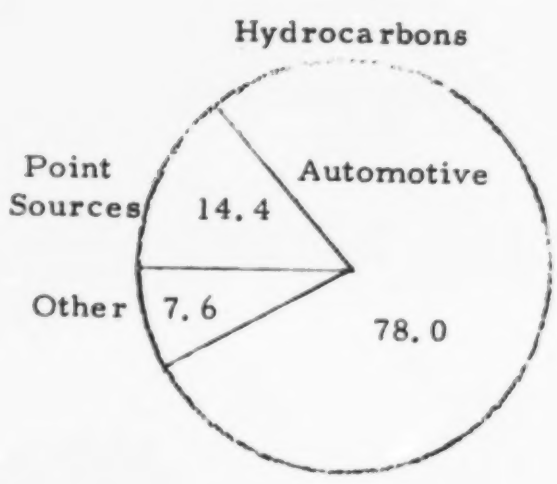
SOUTHEAST MISSOURI INTERSTATE

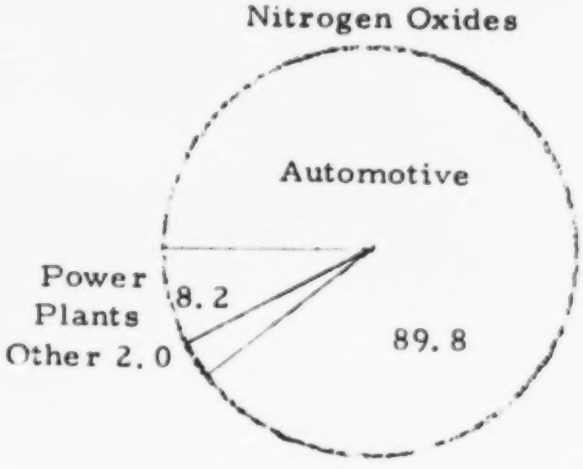
AIR QUALITY CONTROL REGION









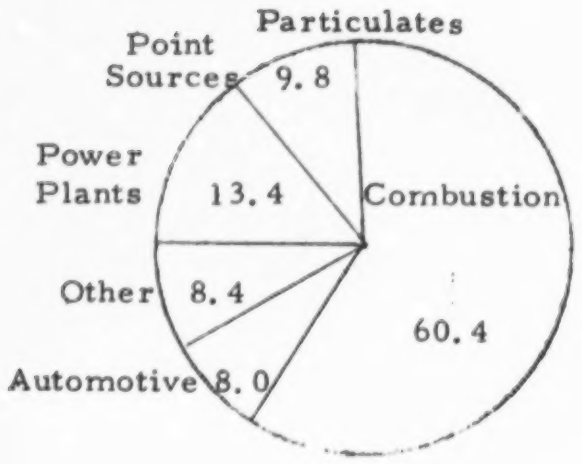


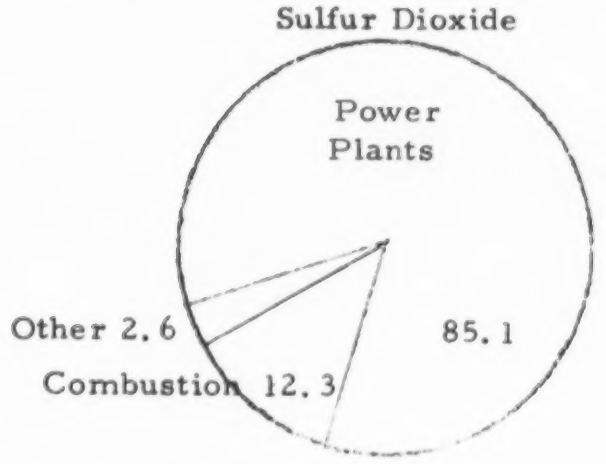
POLLUTANT SUMMARY
Tons per year

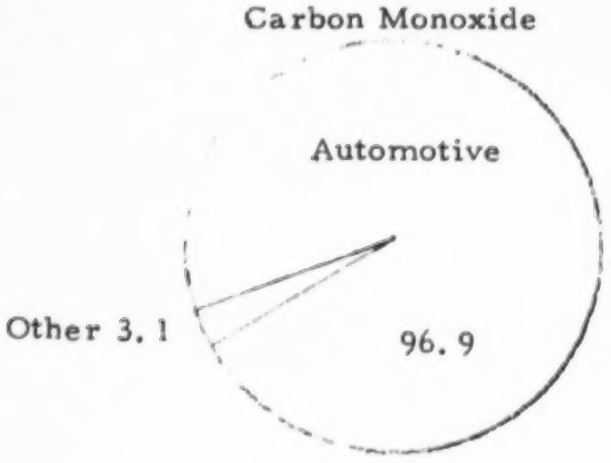
139

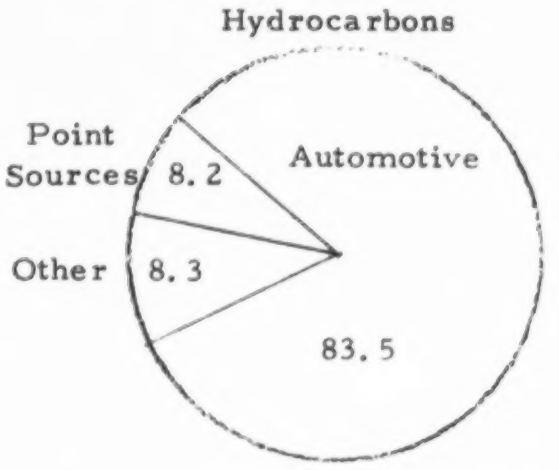
SOUTHWEST MISSOURI INTERSTATE

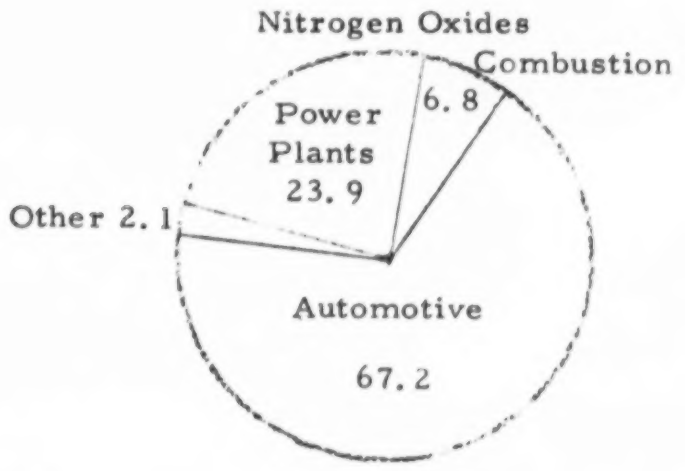
AIR QUALITY CONTROL REGION







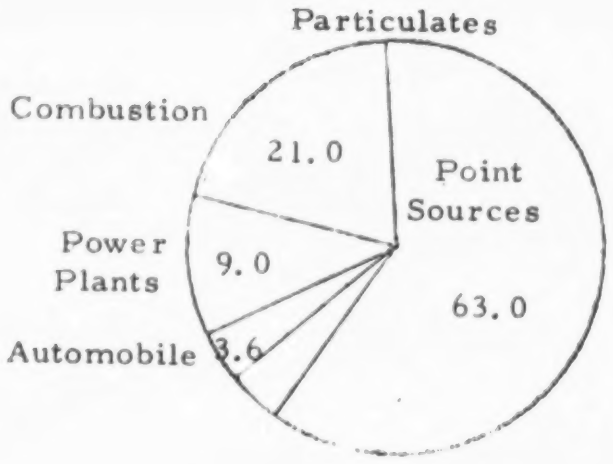


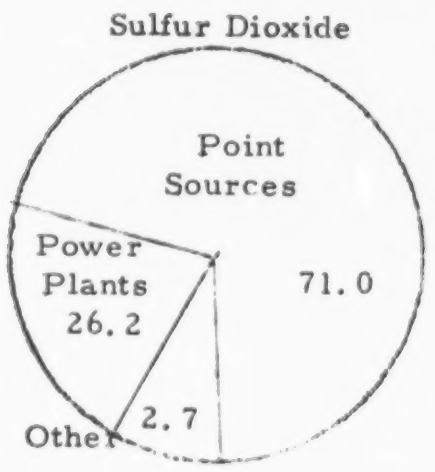


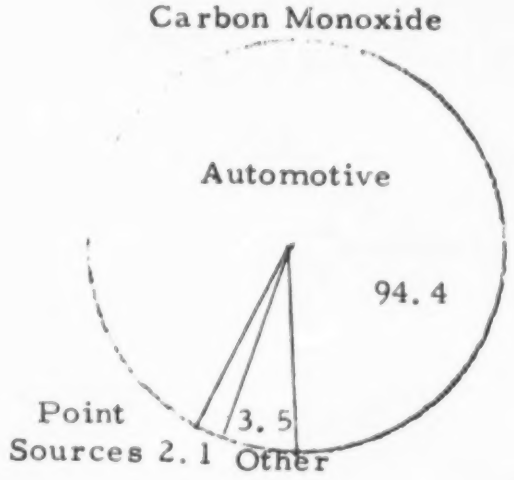
POLLUTANT SUMMARY
Tons per year

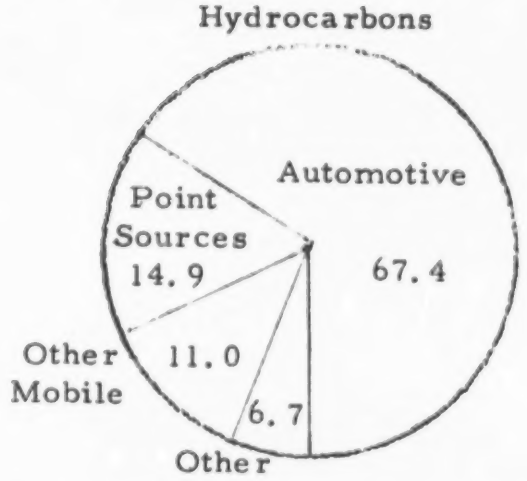
AIR QUALITY CONTROL REGIONS

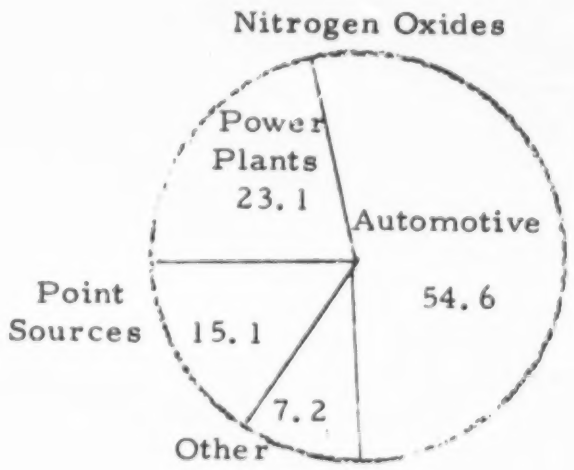
Nos. 070, 094, 137, 138 and 139











REGICNS NOS. 070, 094, 137, 138, 139

STATE TOTALS

Tons per year

	Particulates Actual Amt.	Sulfur Oxides Actual Amt.	Carbon Monoxide Actual Amt.	Hydrocarbons Actual Amt.	Nitrous Oxides Actual Amt.
Power Plants	31574	1083991	7185	7976	234859
Point Sources	224797	2923969	64679	96961	153008
Other Combustion	71003	86625	9922	5630	32672
Incineration	889	399	1802	459	347
Open Burning	3137	197	16519	5831	1175
Automotive	12024	10521	2746187	465024	547399
Other Mobile	5095	8315	50551	75664	43692
Other	6349	6	5051	26896	1178
	354868	4114023	2901896	684441	1014330

Area data shown on the following listings for area sources have inaccuracies which are being corrected. When available from APCO they will be forwarded for appropriate replacement.

070 - Area Source

SOURCE NUMBER 1 REGION NUMBER 07 POLITICAL JURISDICTION 1 COUNTY NAME S.L.AQCR COORDINATES X 0.0 Y 0.0 AREA 0.0

	PARTICULATES		SULFUR OXIDES		CARBON MONOXIDE		HYDROCARBONS		NITROUS OXIDES		FUEL TOTAL	
	ACTUAL	EXPECTED	ACTUAL	EXPECTED	ACTUAL	EXPECTED	ACTUAL	EXPECTED	ACTUAL	EXPECTED	ACTUAL	EXPECTED
DOMESTIC												
COAL	1179.		5974.		3275.		786.		328.		131000.	
OIL	168.		727.		84.		51.		202.		33673.	
NATL.GAS	545.		17.		574.		230.		2153.		57406.	
COMMEIND												
COAL	2632.		5958.		2800.		672.		280.		112000.	
RES.OIL	9.		97.		0.		1.		23.		759.	
DIST.OIL	276.		636.		4.		55.		1104.		36811.	
NATL.GAS	221.		7.		232.		93.		871.		23218.	
NON-PT												
COAL	10350.		9012.		169.		85.		1270.		169390.	
RES.OIL	63.		692.		1.		0.		163.		5441.	
DIST.OIL	82.		189.		1.		16.		327.		10910.	
NATL.GAS	451.		15.		10.		1002.		4384.		50100.	
WOOD	0.		0.		0.		0.		0.		0.	
OPEN BRN	385.		24.		2043.		721.		144.		48078.	
INCINER	301.		85.		430.		129.		129.		86031.	
SOLVENT	0.		0.		0.		1339.		0.		1339.	
VESSELS	105.		146.		274.		211.		308.		8430.	
RAILRD	614.		1597.		1720.		1229.		1942.		49132.	
DIESEL	774.		1393.		10060.		2012.		10525.		61910.	
OTHER	0.		0.		0.		4817.		0.		507097.	
AS 25MPH	1384.		839.		553652.		73820.		39217.		4194336.	
AS 45MPH	1023.		620.		238796.		35819.		34114.		3101243.	
OTHER	1.		0.		1.		0.		0.		640.	
ADOPCL												
1	1212.		376.		34665.		65735.		34282.			
2	1560.		0.		219.		231.		198.			
3	400.		0.		430.		157.		748.			
4	800.		0.		11.		1765.		84.			
5	0.		0.		0.		0.		0.			
6	0.		0.		0.		0.		0.			
7	0.		0.		0.		0.		0.			
8	0.		0.		0.		0.		0.			
9	0.		0.		0.		0.		0.			
10	0.		0.		0.		0.		0.			
11	0.		0.		0.		0.		0.			
12	0.		0.		0.		0.		0.			
13	0.		0.		0.		0.		0.			
14	0.		0.		0.		0.		0.			
15	0.		0.		0.		0.		0.			

EMISSION INVENTORY - 070 Point Source

REGION:070 POLITICAL JURISDISCTION:12 & 1

PROCESS	PART(T/YR)	SOX(T/YR)	CO(T/YR)	HC(T/YR)	NOX(T/YR)	FUEL OR REFUSE	UNITS
	2224.	7075.	0.	8636.	0.		
FUEL COMBUST	8108.	144911.	1160.	580.	20960.		
POWER PLANT	3566.	130800.	716.	215.	12900.		
BITUMINOUS COAL	0.	0.	0.	0.	0.	3696400.	(TONS/YEAR)
ANTHRACITE COAL	0.	0.	0.	0.	0.	0.	(TONS/YEAR)
RESIDUAL OIL	0.	0.	0.	0.	0.	0.	(1000 GAL/YR)
DISTILLATE OIL	0.	0.	0.	0.	0.	0.	(1000 GAL/YR)
NATURAL GAS	0.	0.	0.	0.	0.	0.	(1E06CUFT/YR)
OTHER	3566.	130800.	716.	215.	12900.		
IND,COM,INST.	4542.	14011.	464.	315.	8060.		
BITUMINOUS COAL	0.	0.	0.	0.	0.	947419.	(TONS/YEAR)
ANTHRACITE COAL	0.	0.	0.	0.	0.	0.	(TONS/YEAR)
RESIDUAL OIL	0.	0.	0.	0.	0.	3701.	(1000 GAL/YR)
DISTILLATE OIL	0.	0.	0.	0.	0.	50.	(1000 GAL/YR)
NATURAL GAS	0.	0.	0.	0.	0.	6871.	(1E06CUFT/YR)
OTHER	4542.	14011.	464.	315.	8060.		
SOLID WASTE	17.	42.	44.	66.	88.		
MUNCIP INCINER	17.	42.	44.	66.	88.	87600.	(TONS/YEAR)
OPEN BURNING	0.	0.	0.	0.	0.	0.	(TONS/YEAR)
ON-SITE INCIN.	0.	0.	0.	0.	0.	0.	(TONS/YEAR)
OTHER	0.	0.	0.	0.	0.	0.	(TONS/YEAR)
TOTAL EMISSIONS	10349.	151928.	1224.	9232.	21048.		

094 - A Source

SOURCE NUMBER 1 REGION NUMBER 094 POLITICAL JURISDICTION 1 COUNTY NAME AQCR 094 COORDINATES X 0.0 Y 0.0 AREA 0.0

	PARTICULATES		SULFUR OXIDES		CARBON MONOXIDE		HYDROCARBONS		NITROUS OXIDES		FUEL TOTAL	
	ACTUAL	EXPECTED	ACTUAL	EXPECTED	ACTUAL	EXPECTED	ACTUAL	EXPECTED	ACTUAL	EXPECTED	ACTUAL	EXPECTED
DOMESTIC												
COAL	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
OIL	5.	57.	3.	2.	6.	1055.						
NATL.GAS	337.	11.	355.	142.	1331.	35488.						
COMMEIND												
COAL	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
RES.OIL	17.	233.	0.	2.	44.	1466.						
DIST.OIL	27.	196.	0.	5.	109.	3622.						
NATL.GAS	126.	4.	133.	53.	499.	13310.						
NON-PT												
COAL	23.	25.	0.	0.	3.	399.						
RES.OIL	40.	553.	0.	5.	104.	3481.						
DIST.OIL	24.	174.	0.	5.	97.	3222.						
NATL.GAS	319.	11.	7.	709.	3101.	35437.						
WOOD	0.	0.	0.	0.	0.	0.						
OPEN BRN	2050.	128.	10088.	3843.	769.	256218.						
INCINER	24.	5.	35.	10.	10.	6917.						
SOLVENT	0.	0.	0.	1097.	0.	1097.						
VESSELS	24.	103.	62.	48.	70.	1908.						
RAILRD	561.	1458.	1570.	1121.	1682.	44851.						
DIESEL	438.	788.	5693.	1139.	5956.	35036.						
OTHER	1.	0.	1.	0.	0.	599.						
AS 25MPH	2417.	1465.	966708.	128894.	68475.	7323550.						
AS 45MPH	0.	0.	0.	0.	0.	0.						
OTHER	0.	0.	0.	5566.	0.	585884.						
AGRICL												
1	572.	273.	2533.	2717.	366.							
2	0.	0.	0.	0.	0.							
3	0.	0.	0.	0.	0.							
4	0.	0.	0.	0.	0.							
5	0.	0.	0.	0.	0.							
6	0.	0.	0.	0.	0.							
7	0.	0.	0.	0.	0.							
8	0.	0.	0.	0.	0.							
9	0.	0.	0.	0.	0.							
10	0.	0.	0.	0.	0.							
11	0.	0.	0.	0.	0.							
12	0.	0.	0.	0.	0.							
13	0.	0.	0.	0.	0.							
14	0.	0.	0.	0.	0.							
15	0.	0.	0.	0.	0.							

REGION:094 POLITICAL JURISDICTION: 1

	PART(T/YR)	SOX(T/YR)	CO(T/YR)	HC(T/YR)	NOX(T/YR)	FUEL OR REFUSE	UNITS
PROCESS	103365.	403343.	7382.	23617.	1380.		
FUEL COMBUST	20592.	1843827.	11114.	11636.	171765.		
POWER PLANT	14266.	396053.	2328.	1532.	49014.		
BITUMINOUS COAL	0.	0.	0.	0.	0.	6983140.	((TONS/YEAR)
ANTHRACITE COAL	0.	0.	0.	0.	0.	0.	((TONS/YEAR)
RESIDUAL OIL	0.	0.	0.	0.	0.	630130.	((1000 GAL/YR)
DISTILLATE OIL	0.	0.	0.	0.	0.	3.	((1000 GAL/YR)
NATURAL GAS	0.	0.	0.	0.	0.	41757.	((10E06CUFT/YR)
OTHER	14266.	396053.	2328.	1532.	49014.		
IND,COMM,INST.	6326.	1447774.	8786.	10104.	122751.		
BITUMINOUS COAL	0.	0.	0.	0.	0.	151905.	((TONS/YEAR)
ANTHRACITE COAL	0.	0.	0.	0.	0.	0.	((TONS/YEAR)
RESIDUAL OIL	0.	0.	0.	0.	0.	531964.	((1000 GAL/YR)
DISTILLATE OIL	0.	0.	0.	0.	0.	473.	((1000 GAL/YR)
NATURAL GAS	0.	0.	0.	0.	0.	19732.	((10E06CUFT/YR)
OTHER	6326.	1447774.	8786.	10104.	122751.		
SOLID WASTE	129.	319.	8.	4.	151.		
MUNICIP INCINER	0.	0.	0.	0.	0.	0.	((TONS/YEAR)
OPEN BURNING	0.	0.	0.	0.	0.	0.	((TONS/YEAR)
ON-SITE INCIN.	0.	0.	0.	0.	0.	0.	((TONS/YEAR)
OTHER	129.	319.	8.	4.	151.	15909.	((TONS/YEAR)
TOTAL EMISSIONS	124086.	2247480.	19504.	35257.	173296.		

137 Ar urce

SOURCE NUMBER 1 REGION NUMBER 137POLITICAL JURISDICTION 1 COUNTY NAME AQCR 137 COORDINATES X 0.0 Y 0.0 ARE 0.0

	PARTICULATES		SULFUR OXIDES		CARBON MONOXIDE		HYDROCARBONS		NITROUS OXIDES		FUEL TOTAL	
	ACTUAL	EXPECTED	ACTUAL	EXPECTED	ACTUAL	EXPECTED	ACTUAL	EXPECTED	ACTUAL	EXPECTED	ACTUAL	EXPECTED
DOMESTIC												
COAL	0.		0.		0.		0.		0.		0.	
OIL	323.		1396.		162.		97.		388.		64620.	
NATL.GAS	186.		6.		196.		78.		735.		19610.	
COM&IND												
COAL	0.		0.		0.		0.		0.		0.	
RES.OIL	156.		1720.		1.		20.		406.		13525.	
DIST.OIL	146.		421.		2.		29.		584.		19482.	
NATL.GAS	289.		9.		304.		122.		1141.		30430.	
NON-PT												
COAL	27190.		22969.		384.		192.		2878.		383774.	
RES.OIL	53.		583.		0.		7.		138.		4586.	
DIST.OIL	13.		38.		0.		3.		53.		1760.	
NATL.GAS	37.		1.		1.		82.		358.		4091.	
WOOD	0.		0.		0.		0.		0.		0.	
OPEN BRN	105.		7.		557.		196.		39.		13098.	
INCINER	0.		0.		0.		0.		0.		0.	
SOLVENT	0.		0.		0.		744.		0.		744.	
VESSELS	212.		356.		550.		423.		619.		16927.	
RAILRD	522.		1357.		1461.		1044.		1566.		41753.	
DIESEL	422.		760.		5489.		1098.		5743.		33761.	
OTHER	0.		0.		0.		3694.		0.		388792.	
AS 25MPH	1237.		749.		494602.		65947.		35034.		3746983.	
AS 45MPH	370.		223.		85695.		12854.		12242.		1112917.	
OTHER	0.		0.		0.		0.		0.		0.	
ADDPOL												
1	115.		79.		452.		90.		57.			
2	106.		6.		260.		0.		15.			
3	940.		0.		34.		0.		0.			
4	125.		0.		0.		0.		0.			
5	18.		0.		0.		0.		0.			
6	137.		0.		0.		0.		0.			
7	0.		0.		0.		0.		0.			
8	0.		0.		0.		0.		0.			
9	0.		0.		0.		0.		0.			
10	0.		0.		0.		0.		0.			
11	0.		0.		0.		0.		0.			
12	0.		0.		0.		0.		0.			
13	0.		0.		0.		0.		0.			
14	0.		0.		0.		0.		0.			
15	0.		0.		0.		0.		0.			

EMISSION INVENTORY - 137 Point Source

REGION:137 POLITICAL JURISDICTIONS: 1

	PART(T/YR)	SOX(T/YR)	CO(T/YR)	HC(T/YR)	NOX(T/YR)	FUEL OR REFUSE	UNITS
PROCESS	23743.	800000.	1969.	7800.	23.		
FUEL COMBUST	10864.	33[illegible]6.	2590.	4923.	96181.		
POWER PLANT	8793.	29[illegible]7.	2113.	4743.	85480.		
BITUMINOUS COAL	8744.	29[illegible]6.	2112.	4658.	84[illegible]9.	3631830.	((TONS/YEAR)
ANTHRACITE COAL	0.	0.	0.	0.	0.	0.	((TONS/YEAR)
RESIDUAL OIL	0.	0.	0.	0.	0.	0.	((1000 GAL/YR)
DISTILLATE OIL	0.	0.	0.	0.	0.	0.	((1000 GAL/YR)
NATURAL GAS	27.	1.	1.	85.	831.	4260.	((10E06CUFT/YR)
OTHER	0.	0.	0.	0.	0.		
IND,COMM,INST.	2073.	47359.	478.	180.	10701.		
BITUMINOUS COAL	2069.	47359.	478.	143.	10540.	1086530.	((TONS/YEAR)
ANTHRACITE COAL	0.	0.	0.	0.	0.	0.	((TONS/YEAR)
RESIDUAL OIL	0.	0.	0.	0.	0.	0.	((1000 GAL/YR)
DISTILLATE OIL	0.	0.	0.	0.	0.	0.	((1000 GAL/YR)
NATURAL GAS	4.	1.	0.	37.	161.	1938.	((10E06CUFT/YR)
OTHER	0.	0.	0.	0.	0.		
SOLID WASTE	1.	0.	206.	17.	2.		
MUNICIP INCINER	1.	0.	206.	17.	2.	3170.	((TONS/YEAR)
OPEN BURNING	0.	0.	0.	0.	0.	0.	((TONS/YEAR)
ON-SITE INCIN.	0.	0.	0.	0.	0.	0.	((TONS/YEAR)
OTHER	0.	0.	0.	0.	0.	0.	((TONS/YEAR)
TOTAL EMISSIONS	34610.	1130695.	4765.	12740.	96206.		

138 Area Source

SOURCE NUMBER | REGION NUMBER 138 POLITICAL JURISDICTION | COUNTY NAME AQCR 138 COORDINATES X 0.0 Y 0.0 AREA 0.0

	PARTICULATES		SULFUR OXIDES		CARBON MONOXIDE		HYDROCARBONS		NITROUS OXIDES		FUEL TOTAL	
	ACTUAL	EXPECTED	ACTUAL	EXPECTED	ACTUAL	EXPECTED	ACTUAL	EXPECTED	ACTUAL	EXPECTED	ACTUAL	EXPECTED
DOMESTIC												
COAL	0.		0.		0.		0.		0.		0.	
OIL	99.		429.		50.		30.		119.		1980.	
NATL.GAS	95.		3.		100.		40.		375.		10000.	
COMM&IND												
COAL	0.		0.		0.		0.		0.		0.	
RES.OIL	97.		1075.		1.		13.		254.		8450.	
DIST.OIL	91.		267.		1.		18.		365.		12150.	
NATL.GAS	153.		5.		161.		64.		604.		16100.	
NON-PT												
COAL	7810.		6088.		134.		67.		1001.		133500.	
RES.OIL	48.		529.		0.		6.		125.		4160.	
DIST.OIL	12.		35.		0.		2.		48.		1600.	
NATL.GAS	32.		1.		1.		70.		308.		3520.	
WOOD	0.		0.		0.		0.		0.		0.	
OPEN BRN	97.		6.		514.		182.		36.		12100.	
INCINER	0.		0.		0.		0.		0.		0.	
SOLVENT	0.		0.		0.		520.		0.		520.	
VESSELS	90.		138.		208.		160.		233.		6300.	
RAILRD	505.		1313.		1414.		1010.		1515.		40400.	
DIESEL	599.		1078.		7785.		1557.		8145.		47910.	
OTHER	0.		0.		0.		2434.		0.		256200.	
AS 25MPH	818.		496.		327229.		43430.		23179.		2479000.	
AS 45MPH	243.		146.		56287.		8443.		8041.		731000.	
OTHER	0.		0.		0.		0.		0.		0.	
AGGROL												
1	29.		90.		539.		37.		22.			
2	462.		0.		1423.		117.		59.			
3	300.		0.		0.		0.		0.			
4	77.		0.		0.		0.		0.			
5	2.		0.		0.		0.		0.			
6	49.		0.		0.		0.		0.			
7	11.		1.		1084.		93.		11.			
8	0.		0.		0.		0.		0.			
9	0.		0.		0.		0.		0.			
10	0.		0.		0.		0.		0.			
11	0.		0.		0.		0.		0.			
12	0.		0.		0.		0.		0.			
13	0.		0.		0.		0.		0.			
14	0.		0.		0.		0.		0.			
15	0.		0.		0.		0.		0.			

EMISSION INVENTORY - 138 Point Source

REGION:139 POLITICAL JURISDICTION: 1

PROCESS	PART(T/YR)	SOX(T/YR)	CO(T/YR)	HC(T/YR)	NOX(T/YR)	FUEL OR REFUSE	UNITS
FUEL COMBUST	50402.	40756.	4143.	9856.	9.		
POWER PLANT	1159.	91228.	846.	267.	24751.		
BITUMINOUS COAL	1106.	90630.	795.	239.	23850.	1590000.	((TONS/YEAR)
ANTHRACITE COAL	0.	0.	0.	0.	0.	0.	((TONS/YEAR)
RESIDUAL OIL	0.	0.	0.	0.	0.	0.	((1000 GAL/YR)
DISTILLATE OIL	0.	0.	0.	0.	0.	0.	((1000 GAL/YR)
NATURAL GAS	0.	0.	0.	0.	0.	0.	((10E06CUFT/YR)
OTHER	0.	0.	0.	0.	0.		
IND.COMM.INST.	53.	598.	71.	28.	901.		
BITUMINOUS COAL	20.	565.	67.	26.	890.	103940.	((TONS/YEAR)
ANTHRACITE COAL	0.	0.	0.	0.	0.	0.	((TONS/YEAR)
RESIDUAL OIL	0.	0.	0.	0.	0.	2220.	((1000 GAL/YR)
DISTILLATE OIL	0.	0.	0.	0.	0.	0.	((1000 GAL/YR)
NATURAL GAS	0.	0.	0.	0.	0.	44.	((10E06CUFT/YR)
OTHER	33.	3.	4.	2.	11.		
SOLID WASTE	357.	6.	1104.	95.	28.		
MUNICIP INCINER	357.	6.	1104.	95.	28.	35703.	((TONS/YEAR)
OPEN BURNING	0.	0.	0.	0.	0.	0.	((TONS/YEAR)
ON-SITE INCIN.	0.	0.	0.	0.	0.	0.	((TONS/YEAR)
OTHER	0.	0.	0.	0.	0.	0.	((TONS/YEAR)
TOTAL EMISSIONS	51918.	131990.	6113.	10218.	24788.		

SOURCE NUMBER | REGION NUMBER 13 | POLITICAL JURISDICTION | COUNTY NAME GRNE | COORDINATES X 0.0 Y 0.0 AREA 0.0 | 13 | ea Source

	PARTICULATES		SULFUR OXIDES		CARBON MONOXIDE		HYDROCARBONS		NITROUS OXIDES		FULL TOTAL	
	ACTUAL	EXPECTED	ACTUAL	EXPECTED	ACTUAL	EXPECTED	ACTUAL	EXPECTED	ACTUAL	EXPECTED	ACTUAL	EXPECTED
DOMESTIC												
COAL	0.		0.		0.		0.		0.		0.	
OIL	162.		700.		81.		49.		194.		32403.	
NATL.GAS	220.		7.		231.		92.		867.		23111.	
COMMEIND												
COAL	0.		0.		0.		0.		0.		0.	
RES.OIL	199.		2080.		2.		25.		491.		16351.	
DIST.OIL	222.		640.		3.		44.		889.		29631.	
NATL.GAS	343.		11.		361.		144.		1353.		36069.	
NON-PT												
COAL	15859.		10381.		94.		47.		707.		94205.	
RES.OIL	107.		1185.		1.		14.		279.		9313.	
DIST.OIL	21.		61.		0.		4.		84.		2809.	
NATL.GAS	157.		5.		3.		349.		1529.		17473.	
WOOD	27.		2.		2.		2.		10.		2000.	
OPEN BRN	473.		30.		2514.		887.		177.		59158.	
INCINER	13.		3.		19.		6.		6.		3822.	
SOLVENT	0.		0.		0.		841.		0.		841.	
VESSELS	14.		25.		37.		29.		42.		1139.	
RAILRD	317.		975.		943.		673.		1010.		26930.	
DIESEL	479.		862.		6226.		1245.		6513.		38314.	
OTHER	0.		0.		0.		4185.		0.		440575.	
AS 25MPH	1433.		869.		573372.		76450.		40614.		4343726.	
AS 45MPH	397.		233.		89587.		13438.		12798.		1163462.	
OTHER	0.		0.		0.		0.		0.		1501.	
AIRPOL												
1	13397.		4543.		11832.		58991.		2935.			
2	12045.		0.		0.		0.		0.			
3	0.		0.		0.		0.		0.			
4	0.		0.		0.		0.		0.			
5	0.		0.		0.		0.		0.			
6	0.		0.		0.		0.		0.			
7	0.		0.		0.		0.		0.			
8	0.		0.		0.		0.		0.			
9	0.		0.		0.		0.		0.			
10	0.		0.		0.		0.		0.			
11	0.		0.		0.		0.		0.			
12	0.		0.		0.		0.		0.			
13	0.		0.		0.		0.		0.			
14	0.		0.		0.		0.		0.			
15	0.		0.		0.		0.		0.			

EMISSION INVENTORY = 139 Point Source

REGION:139 POLITICAL JURISDISCTION: 1

	PART(T/YR)	SOX(T/YR)	CO(T/YR)	HC(T/YR)	NOX(T/YR)	FUEL OR REFUSE	UNITS
PROCESS	1636.	12.	5843.	8544.	98.		
FUEL COMBUST	3653.	101686.	475.	875.	21107.		
POWER PLANT	3540.	101592.	471.	843.	20930.		
BITUMINOUS COAL	3540.	101592.	471.	843.	20930.	942000.	((TONS/YEAR)
ANTHRACITE COAL	0.	0.	0.	0.	0.	0.	((TONS/YEAR)
RESIDUAL OIL	0.	0.	0.	0.	0.	0.	((1000 GAL/YR)
DISTILLATE OIL	0.	0.	0.	0.	0.	0.	((1000 GAL/YR)
NATURAL GAS	0.	0.	0.	0.	0.	0.	((1E6SCUFT/YR)
OTHER	0.	0.	0.	0.	0.		
IND,COMM,INST.	113.	105.	4.	32.	177.		
BITUMINOUS COAL	0.	0.	0.	0.	0.	0.	((TONS/YEAR)
ANTHRACITE COAL	0.	0.	2.	1.	0.	52.	((TONS/YEAR)
RESIDUAL OIL	0.	0.	0.	0.	0.	0.	((1000 GAL/YR)
DISTILLATE OIL	109.	105.	1.	22.	137.	15315.	((1000 GAL/YR)
NATURAL GAS	4.	0.	0.	9.	41.	467.	((1E6SCUFT/YR)
OTHER	0.	0.	0.	0.	0.		
SOLID WASTE	64.	1.	2327.	198.	21.		
MUNCIP INCINER	64.	1.	2327.	198.	21.	33295.	((TONS/YEAR)
OPEN BURNING	0.	0.	0.	0.	0.	0.	((TONS/YEAR)
ON-SITE INCIN.	0.	0.	0.	0.	0.	0.	((TONS/YEAR)
OTHER	0.	0.	0.	0.	0.	0.	((TONS/YEAR)
TOTAL EMISSIONS	5393.	101699.	8645.	9617.	21226.		

NOT REPRODUCIBLE

SOURCE NUMBER | REGION NUMBER 139 POLITICAL JURISDICTION | COUNTY NAME GENE COORDINATES X 0.0 Y 0.0 AREA 0.0

	PARTICULATES ACTUAL	PARTICULATES EXPECTED	SULFUR OXIDES ACTUAL	SULFUR OXIDES EXPECTED	CARBON MONOXIDE ACTUAL	CARBON MONOXIDE EXPECTED	HYDROCARBONS ACTUAL	HYDROCARBONS EXPECTED	NITROUS OXIDES ACTUAL	NITROUS OXIDES EXPECTED	FUEL TOTAL ACTUAL	FUEL TOTAL EXPECTED
DOMESTIC												
COAL	0.		0.		0.		0.		0.		0.	
OIL	162.		700.		81.		49.		194.		32403.	
NATL.GAS	220.		7.		231.		92.		867.		23111.	
COMMEIND												
COAL	0.		0.		0.		0.		0.		0.	
RES.OIL	158.		2080.		2.		25.		491.		16351.	
DIST.OIL	222.		640.		3.		44.		899.		29631.	
NATL.GAS	343.		11.		361.		144.		1353.		36069.	
NON-PT												
COAL	15959.		10381.		94.		47.		707.		94205.	
RES.OIL	107.		1185.		1.		14.		279.		9313.	
DIST.OIL	21.		61.		0.		4.		44.		2809.	
NATL.GAS	157.		5.		3.		349.		1529.		17473.	
WOOD	27.		2.		2.		2.		10.		2000.	
OPEN BRN	473.		30.		2514.		887.		177.		59158.	
ENGINER	13.		3.		19.		6.		6.		3822.	
SOLVENT	0.		0.		0.		841.		0.		841.	
VESSELS	14.		25.		37.		28.		42.		1139.	
RAILRD	337.		875.		943.		673.		1010.		26930.	
DIESEL	479.		862.		6226.		1245.		6513.		38314.	
OTHER	0.		0.		0.		4195.		0.		440575.	
AS 25MPH	1433.		869.		453919.		74712.		43003.		4343726.	
AS 45MPH	384.		233.		76788.		14892.		13496.		1163462.	
OTHER	0.		0.		0.		0.		0.		1501.	
ADDPOL												
1	193.		119.		4123.		1139.		79.			
2	622.		0.		1588.		137.		63.			
3	460.		0.		0.		0.		0.			
4	101.		0.		0.		0.		0.			
5	18.		0.		0.		0.		0.			
6	79.		0.		0.		0.		0.			
7	0.		0.		0.		0.		0.			
8	0.		0.		0.		0.		0.			
9	0.		0.		0.		0.		0.			
10	0.		0.		0.		0.		0.			
11	0.		0.		0.		0.		0.			
12	0.		0.		0.		0.		0.			
13	0.		0.		0.		0.		0.			
14	0.		0.		0.		0.		0.			
15	0.		0.		0.		0.		0.			

EMISSION INVENTORY - 139 Greene County Point Source

REGION:139 POLITICAL JURISDISCTION: 1

	PART(T/YR)	SOX(T/YR)	CO(T/YR)	HC(T/YR)	NOX(T/YR)	FUEL OR REFUSE	UNITS
PROCESS	1037.	0.	590.	356.	0.		
FUEL COMBUST	295.	2396.	19.	165.	1953.		
POWER PLANT	287.	2349.	19.	163.	1827.		
BITUMINOUS COAL	0.	0.	0.	0.	0.	30914.	(TONS/YEAR)
ANTHRACITE COAL	0.	0.	0.	0.	0.	0.	(TONS/YEAR)
RESIDUAL OIL	0.	0.	0.	0.	0.	0.	(1000 GAL/YR)
DISTILLATE OIL	0.	0.	0.	0.	0.	0.	(1000 GAL/YR)
NATURAL GAS	0.	0.	0.	0.	0.	7952.	(10**6CUFT/YR)
OTHER	287.	2349.	19.	163.	1827.		
IND,COMM,INST.	6.	47.	0.	2.	26.		
BITUMINOUS COAL	0.	0.	0.	0.	0.	0.	(TONS/YEAR)
ANTHRACITE COAL	0.	0.	0.	0.	0.	0.	(TONS/YEAR)
RESIDUAL OIL	0.	0.	0.	0.	0.	250.	(1000 GAL/YR)
DISTILLATE OIL	0.	0.	0.	0.	0.	0.	(1000 GAL/YR)
NATURAL GAS	0.	0.	0.	0.	0.	363.	(10**6CUFT/YR)
OTHER	6.	47.	0.	2.	26.		
SOLID WASTE	0.	0.	0.	0.	0.		
MUNCIP INCINER	0.	0.	0.	0.	0.	0.	(TONS/YEAR)
OPEN BURNING	0.	0.	0.	0.	0.	0.	(TONS/YEAR)
ON-SITE INCIN.	0.	0.	0.	0.	0.	0.	(TONS/YEAR)
OTHER	0.	0.	0.	0.	0.	0.	(TONS/YEAR)
TOTAL EMISSIONS	1342.	2396.	599.	521.	1953.		

NOT REPRODUCIBLE

APPENDICES A & B

POINT SOURCE DATA FORM

AREA SOURCE DATA FORM

APPENDIX A

POINT SOURCE DATA FORM

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REV 3

SOURCE NUMBER	REGION	SIC	SITE	PROCESS CODE	DESCRIPTIVE NAME (a)	COORDINATES KM X	COORDINATES KM Y	POLITICAL JURISDICTION	OWNER (b)	TYPE (c)	OPERATING (hours/year)	STACK PARAMETERS HEIGHT (ft.)	STACK PARAMETERS DIA. (ft.)	STACK PARAMETERS TEMP (°F)	STACK PARAMETERS VELOCITY (ft/sec)	MAXIMUM GAS VOLUME 10^2 (ACFM)	PLUME RISE (ft^2/sec)	
																		A

SOURCE NUMBER	MAXIMUM PROCESS WEIGHT RATE (lb/hr)	NORMAL PROCESS WEIGHT RATE (lb/hr)	COMMENTS (a)	MAXIMUM BOILER CAPACITY (10^6 BTU/hr)	(d) EF	COAL (tons/year)	(d) EF	RESIDUAL OIL (10^3 Gal/year)	(d) EF	DISTILLATE OIL (10^3 Gal/year)	(d) EF	NATURAL GAS (10^6 CF/year)	HEAT CONTENT COAL 10^6 (BTU/ton)	HEAT CONTENT RESIDUAL OIL (10^3 BTU/Gal.)	HEAT CONTENT DIST. OIL (10^3 BTU/Gal.)	HEAT CONTENT NATURAL GAS (BTU/CF)	
																	B

SOURCE NUMBER	% ASH COAL	SULFUR CONTENT COAL	SULFUR CONTENT RESID.	SULFUR CONTENT DIST.	SULFUR CONTENT NAT. GAS	CONTROL EFFICIENCY PART	CONTROL EFFICIENCY SO_2	DEVICE INDENT	COMMENTS (a)	HAND CALCULATED EMISSIONS (tons/year) PART.	SO_2	CO	HC	NO_2	ALLOWABLE EMISSIONS (tons/year) PART	ALLOWABLE EMISSIONS (tons/year) SO_2	
																	C

SOURCE NUMBER	COMMENTS (a)	
		D

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

(a) Letters and numbers may be put in these columns
(b) Owner → Private - 1; Local - 2; State - 3; Federal - 4; Utilities - 5.
(c) Type → Process - 1; Fuel Combustion - 2; Solid Waste Disposal - 3.
(d) EF → refers to emission factor set number associated with emission factors on emission factor sheet.
All decimal points are implied and are signified by a ▼ between columns.

APPENDIX B

NEBRASKA TABLE 3 AREA2 SOURCE DATA FORM

APPORTIONING FACTORS FOR COMPUTER CALCULATED EMISSIONS

Source #	REGION	POLITICAL SUBDIVISION		X COORDIN. KM.	Y COORDIN. KM	SOURCE AREA KM^2	STACK hgt. (ft.)	DOMESTIC A-1 COAL	DOMESTIC A-2 OIL	DOMESTIC A-3 NATL. GAS	COMMERCIAL AND INSTITUTIONAL A-4 COAL	COMMERCIAL AND INSTITUTIONAL A-5 RES. OIL	COMMERCIAL AND INSTITUTIONAL A-6 DIST. OIL	COMMERCIAL AND INSTITUTIONAL A-7 NATL. GAS
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80														

Source #	NON-POINT SOURCE INDUSTRIAL A-8 COAL	A-9 RES. OIL	A-10 DIST. OIL	A-11 NATL. GAS	A-12 WOOD	OPEN A-13 BURNING	A-14 INCINER.	SOLVENT A-15 EVAPOR	VESSELS A-16 DIESEL	A-17 RAILROAD	DIESEL A-18 MOTOR VE	A-19 OTHER	GASOLINE MOTOR VEHICLES A-20 25 M.P.H	A-21 45	A-22 OTHER

HAND CALCULATED EMISSIONS

Source #	PARTICULATE EMISSIONS (tons yr) P-1	P-2	P-3	P-4	P-5	P-6	P-7	P-8	P-9	P-10	P-11	P-12	P-13	P-14	P-15

Source #	SO, EMISSIONS (tons yr) S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8	S-9	S-10	S-11	S-12	S-13	S-14	S-15

Source #	CO EMISSIONS (tons yr) C-1	C-2	C-3	C-4	C-5	C-6	C-7	C-8	C-9	C-10	C-11	C-12	C-13	C-14	C-15

Source #	HYDROCARBON EMISSIONS (tons yr) H-1	H-2	H-3	H-4	H-5	H-6	H-7	H-8	H-9	H-10	H-11	H-12	H-13	H-14	H-15

Source #	NO, EMISSIONS (tons yr) N-1	N-2	N-3	N-4	N-5	N-6	N-7	N-8	N-9	N-10	N-11	N-12	N-13	N-14	N-15

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

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APPENDIX C

COVER LETTER AND PRIMARY FIRM INFORMATION

POINT SOURCE QUESTIONNAIRE

AIR CONSERVATION COMMISSION
State of Missouri

[illegible] WEST HIGH STREET [illegible] JEFFERSON [illegible] [illegible] [illegible]

WARREN E. HEARNES
GOVERNOR

JAMES H. BOGLE
CHAIRMAN
P.O. BOX 7
EAST PRAIRIE 63845

H. D. SHELL, P.E.
EXECUTIVE SECRETARY
ACTING

COMMISSION MEMBERS

JOHN A. GUNN, JR.
6414 MURDOCH AVE.
ST. LOUIS

MICHAEL F. KICKHAM
730 BELLARMINE
FLORISSANT 63031

ALTON L. JONES
328 N. SERGEANT
JOPLIN 64801

LAVERNE (DUSTY) RHODES
920 HOME SAVINGS BLDG.
KANSAS CITY 64106

W. FRED SCHAEFFER
PRESIDING JUDGE
COUNTY COURT
SPRINGFIELD 65802

L. M. GARNER, M.D.
ACTING DIRECTOR
DIVISION OF HEALTH
JEFFERSON CITY 65101

Dear Sir,

The Missouri Air Conservation Commission is conducting an emission survey of air contaminants in the State of Missouri. This survey is one of the duties required of the Commission by the state law, Chapter 203, Revised Statutes of Missouri.

Because of the general nature of your business, you have been sent this letter and forms. You are hereby requested to cooperate by completing the attached forms and returning them as soon as possible. However, the nature of your business will determine which forms need to be completed.

Your business may be one whose operations are such that forms MACC #15-1 and 6 only need completion (every firm should complete the "Primary Plant Information" form and probably every firm will have a direct or indirect heating boiler). The remaining forms should be completed when appropriate--on the back of each form are explanations and guides for completing that form with the proper information.

If your company receives just one set of forms and operates plants in more than one location, please request additional sets of forms for each plant location, or you may duplicate this set if you have the facilities.

Any information relating to trade secrets or secret processes obtained as a result of this emission inventory and indicated as confidential, shall be kept so and will not be disclosed to the public in an identifiable form.

Any modifications which are made on emission sources and would make the information from this survey inaccurate should be reported to the Commission.

We would like to request the return of this survey by June 11, 1971, but if you have any questions or if we can be of any assistance, please do not hesitate to contact us.

Very truly yours,

H. D. Shell, P. E.
Acting Executive Secretary

HDS:JC:n

Enclosures

General Guides

There are six reporting forms which are to be completed where appropriate. Where the format of the inventory form does not apply specifically to the given system being reported on, the reporter should complete as much of the form as possible and supply such additional information as is consistent with the intent shown on the form on a separate attached sheet.

Where a complex system of sources, collectors and stacks exist, a block flow diagram illustrating the relationship between the sources, appropriate collectors, and points of discharge for the emission should be included with the forms. The diagram need only label the source with its appropriate emission stream.

Primary Firm Information (Form MACC #15-1)

A. Introduction: The purpose of this form is to identify and locate the firm and to describe the general type of business conducted.

B. Instructions: Please try to complete all non-shaded spaces:

1. Firm Code - The employer identification number assigned to all employers by the Internal Revenue Service, U.S. Treasury Department

2. Firm Name - The legal firm

3. Firm Address - The exact location of the source for which the submitted data is applicable

4. Normal Firm Operating Schedule - indicate:

   a. Shifts per day
   b. Hours per shift
   c. Number of operating days per week
   d. Number of operating days per year
   e. Month to month for peak operating and non-operating periods

5. Nature of Business - check:

   a. If your firm has combustion equipment as boilers, etc.

   b. If your firm has an incinerator.

   c. If your firm uses solvents such as dry cleaners, petroleum operations, etc.

   d. Type of business along with indicating the principal product and specific type of business

   e. Method of handling refuse at site.

   and indicate:

   f. Your best estimate in tons per year for each type of combustible refuse generated at site.

   g. Your best estimate in tons per year of noncombustible refuse generated.

   h. Your principal method of non-combustible refuse disposal by checking appropriate box.

Incinerator Information (Form MACC #15-2)

A. Introduction: The information obtained from this form will be used to determine the general emissions from refuse, salvage, and waste disposal incineration.

B. Instructions: Please attempt to complete all non-shaded spaces. You may wish to refer to your original purchase order, technical specifications brochure of the incinerator, etc. If something is not known, please attempt to describe the general aspects of the equipment and refuse, etc.

1. Indicate the number of units of each type of incinerator.
2. Indicate as accurately as possible the manufacturer's name and model number.
3. Date the unit was installed.
4. Classification of incinerators - the classification used should be consistent with those shown in Footnote (1), located on the opposite side of this sheet.
5. Indicate the rated burning capacity in pounds per hour.
6. Classification of wastes - indicate the type of waste by the list below:

Type 0. Trash, a mixture of highly combustible waste such as paper, cardboard cartons, wood boxes, and combustible floor sweepings from commercial and industrial activities containing up to 10% by-weight of plastic bags, coated paper, laminated paper, treated corrugated cardboard, oily rags and plastic or rubber scraps.

Type 1. Rubbish, a mixture of combustible waste such as paper, cardboard cartons, wood scrap, foliage and combustible floor sweepings from domestic, commercial, and industrial activities containing up to 20% by-weight of restaurant or cafeteria waste, but little or no treated papers, plastic or rubber wastes.

Type 2. Refuse consisting of approximately an even mixture of rubbish and garbage by-weight.

Type 3. Garbage, consisting of animal and vegetable wastes from cafeterias, hotels, hospitals, markets and like installations.

Type 4. Human and animal remains, consisting of carcasses, organs, and solid organic wastes from hospitals, laboratories, abattoirs, animal pounds and similar sources.

Type 5. By-product waste, gaseous, liquid, or semi-liquid such as tar, paints, solvents, sludge, fumes, etc. from industrial operations.

Type 6. Solid by-product waste such as rubber, plastics, woodwaste, etc. from industrial operations.

Type 7. Sewage sludge, the accumulated settled solids deposited from sewage.

7. Indicate in pounds the daily amount burned.
8. Check if your incinerator has an auxiliary burner.
9. Your best estimate in Standard Cubic Feet Per Minute (SCFM) for the incinerator exhaust volume with standard conditions being 60°F and 29.92 inches of mercury.

If the incinerator has more than one exhaust stream, each stream should be listed and described separately with reference to volume, collection equipment, pollutant and discharge point. In conjunction, complete Form MACC #15-6, giving pertinent collector and emission information for each source listed.

Boiler Information (Form MACC #15-3)

A. Introduction: The purpose of this form is to describe the characteristics and methods used in your boiler.

B. Instructions: Please attempt to complete all non-shaded spaces. If something is not known, please attempt to describe the general aspects of your boiler.

1. Indicate the number of units of each type of boiler.
2. Indicate as accurately as possible the manufacturer's name and model number.
3. Date (month and year) the unit was installed.
4. Indicate the rated input as thousand BTU's per hour.
5. Indicate the maximum and normal firing rates at which the boiler is operated. The unit of quantity should be consistent with those shown in Footnote (3) on the bottom of the opposite side of this page. Insert the appropriate number in the column marked "units".
6. Indicate the method of firing from those shown in Footnote (4) and the appropriate number inserted in the first column under "Method of Firing". Use the second column to indicate wnether fly ash reinjection is used. (If oil or gas, leave these spaces blank).
7. Indicate the appropriate number in Footnote (5) under the column "Type of Fuel". If the boiler is equipped to fire several types of fuels, list all types and give pertinent information.
8. Indicate the percent of sulfur in this fuel.
9. Indicate the percent of ash in this fuel.
10. Your best estimate in standard cubic feet per minute (SCFM) for the boiler exhaust volume.

    The volume of boiler exhaust should be reported in standard cubic feet per minute (SCFM) with standard conditions being $60^{o}F$ and 29.92 inches of mercury.

    If a boiler has more than one exhaust stream, each stream should be listed and described separately with reference to volume, collection equipment, pollutant and discharge point. Several examples are listed below:

    a. If a boiler is ducted into collectors in parallel, the exhaust should be reported as received by each collector.

    b. If a bank of boilers are ducted into a bank of collectors, a relationship should be designated.

    c. If similar boilers are discharged to different collectors, but into a common stack, the exhaust and boiler information should be reported individually.

In conjunction, complete Form MACC #15-6, giving pertinent collector and emission information for each source listed.

Solvent Information (Form MACC #15-4)

A. Introduction: The purpose of this form is to identify and describe your solvent processes and facility.

B. Instructions: Please attempt to complete all non-shaded spaces. If something is not known, please attempt to describe the general aspects of your solvent process.

1. Indicate the number of units of each type of solvent process or facility.

2. Indicate the name or briefly describe the process or facility which discharges to the outdoor atmosphere, e.g., dry cleaning, metal cleaning, painting operations, petroleum handling and storage, gasoline storage, etc.

3. Date (month and year) the process or operation was installed.

4. Indicate the type or types of solvents that are produced or processed, a complete list should be given, e.g., petroleum solvents, chlorinated solvents, etc.

5. Indicate in percent the composition of each solvent processed, handled or produced. The measure used should be consistent with those shown in Footnote (1) located at the bottom of the opposite side of this page. Insert the appropriate number from the footnote in column labeled "units".

6. Your best estimate of evaporative losses per year for each solvent used. If not known, make the assumption the amount added each year is equivalent to your losses. The unit used should be consistent with those shown in Footnote (2). Insert the appropriate number from the footnote in the column labeled "units".

Process Information (Form MACC #15-5)

A. Introduction: The purpose of this form is to identify and describe your operation. This form is not applicable for boilers or incinerators. Use it to supply information for any other type of air contamination source.

Describe each process or operation separately. In situations where there are similar processes, the information on this form can be combined. Combining is undesirable, for example, where size, collection system or discharge points are different.

B. Instructions: Please try to complete all non-shaded spaces.

1. Indicate the number of units of each type of process.

2. Indicate the name or briefly describe the process which discharges to the outdoor atmosphere, e.g., sintering, blast furnaces, crushing and drying operations, kilns, catalytic cracking units, evaporators, recovery furnaces, casting, spraying, degreasing, etc.

3. Date (month and year) the process or operation was installed.

4. Indicate the type or types of materials that are produced or processed, a complete list should be given.

5. Indicate the total amount of materials processed or produced under normal and peak operating conditions. The unit used should be consistent with those shown in Footnote (1). Insert the appropriate number from the footnote in the column labeled "units".

6. Your best estimate in standard cubic feet per minute (SCFM) for the process exhaust volume. The volume of process exhaust should be reported in SCFM with standard conditions being 60° F and 29.92 inches of mercury.

If a process has more than one exhaust stream, each stream should be listed and described separately with reference to volume, collection equipment, pollutant and discharge point Several examples are listed below:

a. If a process is ducted into collectors in parallel, the process exhaust should be reported as received by each collector.

b. If a bank of processes are ducted into a bank of collectors, a relationship should be designated.

c. If similar processes are discharged to different collectors, but into a common stack, the process exhaust and process information should be reported individually.

In conjunction, complete Form MACC #15-6, giving pertinent collector and emission information for each source listed.

Collector and Emission Information (Form MACC #15-6)

A. Introduction: The purpose of this form is to identify the contaminants and determine their quantity under operating conditions.

Any person reporting an air contamination source using one or more of the forms for process, combustion or incineration must complete this form. Collector and emission information is required for each air contamination source.

B. Instructions: Please attempt to complete all non-shaded spaces. If something is not known, please attempt to describe the general aspects of the equipment.

1. Type and efficiency of air cleaning equipment--indicate:
   a. as accurately as possible the manufacturer's name and model number
   b. date (month and year) the unit was installed
   c. the type of collector from the list in Footnote (6), located at the bottom of the opposite side of this sheet
   d. the operating efficiencies to the nearest tenth of a percent for efficiencies greater than 95%

2. Dust, fumes, gas, etc. emitted--indicate:
   a. the specific type of pollutants such as hydrocarbons, SO_2, NO_x, CO, Ozone, allergens or radioactive materials
   b. your best estimate in pounds per hour the quantity emitted under normal and peak operating conditions. Where there is a collector, it is the quantity emitted after collection.
   c. the method used to determine the emission rates. Insert the appropriate number so shown in Footnote (7).

3. Stack information--indicate:
   a. in feet, the stack height above the ground
   b. in feet, the stack exit diameter
   c. in degrees Fahrenheit, the stack exit temperature
   d. your best estimate in standard cubic feet per minute (SCFM) for the stack exhaust volume. The volume of exhaust should be reported in SCFM with standard conditions being 60°F and 29.92 inches of mercury.

   If a process has more than one exhaust stream, each stream should be listed and described separately with reference to volume, collection equipment, pollutant and discharge point. Several examples are listed below:

   (1) If a process is ducted into collectors in parallel, the process exhaust should be reported as received by each collector.

   (2) If a bank of processes are ducted into a bank of collectors, a relationship should be designated.

   (3) If similar processes are discharged to different collectors, but into a common stack, the process exhaust and process information should be reported individually.

MACC # . .

MISSOURI AIR CONS .TION COMMISSION
P.O. BOX 1062 · JEFFERSON CITY, MISSOURI 65101
TEL: 314-635-9145

POINT SOURCE QUESTIONNAIRE

(INSTRUCTIONS ON REVERSE SIDE)

(SHADED AREA FOR COMMISSION USE ONLY)

PRIMARY FIRM INFORMATION

HC	FIRM CODE	PLANT CODE	SIC	LOCATION CODE	GEOGRAPHIC CODE	FIRM NAME	AP
1	2-11	12-13	14-17	18-22	23-41	42-78	80
1							

PLANT ADDRESS

HC	FIRM CODE	STREET	CITY	ZIP CODE
1	2-13	14-29	30-45	46-50
2				

NAME & ADDRESS OF OFFICIAL TO BE CONTACTED ON AIR POLLUTION MATTERS

HC	FIRM CODE	INITIAL	LAST NAME	STREET	CITY	ZIP CODE	TEL. A.C.	TELEPHONE NUMBER
1	2-13	14	15-29	30-45	46-61	62-66	67-69	70-76
3								

NORMAL PLANT OPERATING SCHEDULE

HC	FIRM CODE	SHIFTS	HOURS PER SHIFT	DAYS PER WEEK	DAYS PER YEAR	SEASONAL PERIODS – MONTHS: PEAK OPERATING PROCESS	PEAK OPERATING BOILER	NON-OPERATING PROCESS	NON-OPERATING BOILER
4	2-13	14	15-16	17	18-20	21-24	25-28	29-32	33-36
4						TO	TO	TO	TO

NATURE OF BUSINESS

DOES FIRM HAVE ITS OWN: COMBUSTION EQUIPMENT	INCINERATOR	SOLVENTS
37	38	
YES NO	YES NO	YES NO

NATURE OF BUSINESS (cont'd)

INDUSTRY ☐ STATE PRINCIPAL PRODUCT

LODGING ☐ MEDICAL ☐ EDUCATIONAL ☐ GOVERNMENTAL ☐ LAUNDRY AND CLEANING ☐ AGRICULTURAL ☐

OTHER ☐ STATE SPECIFIC TYPE

PRINCIPAL METHOD OF COMBUSTIBLE REFUSE DISPOSAL 39

NOT APPLICABLE 1 ☐ SCAVENGER 3 ☐ OPEN BURNING 5 ☐ OTHER 7 ☐

INCINERATOR 2 ☐ CITY PICK-UP 4 ☐ LAND FILL 6 ☐

TYPE(S) OF COMBUSTIBLE REFUSE GENERATED IN TONS PER YEAR 40-73

CHEMICALS	A ☐	COAL REFUSE	D ☐	SALVAGE RECLAMATION	G ☐	BIOLOGICAL	J ☐
GASES	B ☐	MIXED REFUSE	E ☐	DRY GOODS	H ☐	PAINTS AND SOLVENTS	K ☐
PAPER AND WOOD PRODUCTS	C ☐	PLASTIC PRODUCTS	F ☐	RUBBER PRODUCTS	I ☐		

AMOUNT OF NON-COMBUSTIBLE REFUSE GENERATED IN TONS PER YEAR 74-79

AMOUNT ☐

PRINCIPAL METHOD OF NON-COMBUSTIBLE REFUSE DISPOSAL 80

SCAVENGER 1 ☐ NOT APPLICABLE 3 ☐

FILL 2 ☐ CITY PICK-UP 4 ☐

PERSON PREPARING REPORT (SIGNATURE & TITLE)

DATE

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GENERAL GUIDES

THERE ARE SIX REPORTING FORMS WHICH ARE TO BE COMPLETED WHERE APPROPRIATE. WHERE THE FORMAT OF THE INVENTORY FORM DOES NOT APPLY SPECIFICALLY TO THE GIVEN SYSTEM BEING REPORTED ON, THE REPORTER SHOULD COMPLETE AS MUCH OF THE FORM AS POSSIBLE AND SUPPLY SUCH ADDITIONAL INFORMATION AS IS CONSISTENT WITH THE INTENT SHOWN ON THE FORM ON A SEPARATE ATTACHED SHEET.

WHERE A COMPLEX SYSTEM OF SOURCES, COLLECTORS AND STACKS EXIST, A BLOCK FLOW DIAGRAM ILLUSTRATING THE RELATIONSHIP BETWEEN THE SOURCES, APPROPRIATE COLLECTORS, AND POINTS OF DISCHARGE FOR THE EMISSION SHOULD BE INCLUDED WITH THE FORMS. THE DIAGRAM NEED ONLY LABEL THE SOURCE WITH ITS APPROPRIATE EMISSION STREAM.

PRIMARY FIRM INFORMATION (FORM MACC #15-1)

A. INTRODUCTION: THE PURPOSE OF THIS FORM IS TO IDENTIFY AND LOCATE THE FIRM AND TO DESCRIBE THE GENERAL TYPE OF BUSINESS CONDUCTED.

B. INSTRUCTIONS: PLEASE TRY TO COMPLETE ALL NON-SHADED SPACES:

1. FIRM CODE – THE EMPLOYER IDENTIFICATION NUMBER ASSIGNED TO ALL EMPLOYERS BY THE INTERNAL REVENUE SERVICE, U.S. TREASURY DEPARTMENT

2. FIRM NAME – THE LEGAL FIRM

3. FIRM ADDRESS – THE EXACT LOCATION OF THE SOURCE FOR WHICH THE SUBMITTED DATA IS APPLICABLE

4. NORMAL FIRM OPERATING SCHEDULE – INDICATE:

   A. SHIFTS PER DAY
   B. HOURS PER SHIFT
   C. NUMBER OF OPERATING DAYS PER WEEK
   D. NUMBER OF OPERATING DAYS PER YEAR
   E. MONTH TO MONTH FOR PEAK OPERATING AND NON-OPERATING PERIODS

5. NATURE OF BUSINESS – CHECK:

   A. IF YOUR FIRM HAS COMBUSTION EQUIPMENT AS BOILERS, ETC.
   B. IF YOUR FIRM HAS AN INCINERATOR.
   C. IF YOUR FIRM USES SOLVENTS SUCH AS DRY CLEANERS, PETROLEUM OPERATIONS, ETC.
   D. TYPE OF BUSINESS ALONG WITH INDICATING THE PRINCIPAL PRODUCT AND SPECIFIC TYPE OF BUSINESS
   E. METHOD OF HANDLING REFUSE AT SITE
      AND INDICATE:
   F. YOUR BEST ESTIMATE IN TONS PER YEAR FOR EACH TYPE OF COMBUSTIBLE REFUSE GENERATED AT SITE.
   G. YOUR BEST ESTIMATE IN TONS PER YEAR OF NON-COMBUSTIBLE REFUSE GENERATED.
   H. YOUR PRINCIPAL METHOD OF NON-COMBUSTIBLE REFUSE DISPOSAL BY CHECKING APPROPRIATE BOX.

MAL 15-2

MISSOURI AIR CONSERVATION COMMISSION
P.O. BOX 1062 · JEFFERSON CITY, MISSOURI 65101
TEL. 314-635-9145

INCINERATOR INFORMATION

(SHADED AREA FOR COMMISSION USE ONLY)

TC	1	FC	2 – 13
	2		

(INSTRUCTIONS ON REVERSE SIDE)

INCINERATOR IDENT.	NO OF UNITS	MANUFACTURER'S NAME	CODE	AP	DATE OF INSTALLATION	CLASS (1)	RATED CAPACITY (LBS/HOUR)	BTU/LB AS FIRED	TYPE WASTE	DAILY AMOUNT (LBS)	AUXILIARY BURNER		INCINERATOR EXHAUST VOLUME (SCFM)
											YES	NO	
14–16	17–18		19–20	21	22–27	28	29–34	35–40	41	42–46	47	47	48–53

C-10

FOOTNOTE (1)

CLASS 1 FUEL-FED SINGLE CHAMBER INCINERATORS CAPABLE OF BURNING TYPE 0 OR TYPE 1 WASTE AT THE RATE OF 100 POUNDS OR MORE PER HOUR

CLASS 2 CHUTE-FED MULTIPLE CHAMBER INCINERATORS SUITABLE FOR BURNING TYPE 0 AND TYPE 1 WASTE AT THE RATE 100 POUNDS OR MORE PER HOUR

CLASS 3 DIRECT-FED INCINERATORS SUITABLE FOR BURNING TYPE 0 AND TYPE 1 WASTE AT THE RATE OF 100 POUNDS OR MORE PER HOUR OR TYPE 2 WASTE AT THE RATE OF 75 POUNDS OR MORE PER HOUR

CLASS 4 DIRECT-FED INCINERATORS SUITABLE FOR BURNING TYPE 3 WASTE AT THE RATE OF 75 POUNDS OR MORE PER HOUR

CLASS 5 MUNICIPAL INCINERATORS SUITABLE FOR BURNING TYPE 0, TYPE 1, TYPE 2 OR TYPE 3 WASTE OR A COMBINATION OF ALL FOUR WASTES OR SEWAGE SLUDGE AND ARE RATED IN TONS PER HOUR OR TONS PER 24 HOURS

CLASS 6 CREMATORY AND PATHOLOGICAL INCINERATORS SUITABLE FOR BURNING TYPE 4 WASTE AT THE RATE OF 75 POUNDS OR MORE PER HOUR

CLASS 7 INCINERATORS DESIGNED TO BURN SPECIFIC BY-PRODUCTS WASTES, TYPE 5 OR TYPE 6 WASTE AT THE RATE OF 75 POUNDS OR MORE PER HOUR

CLASS 8 TEPEE INCINERATORS DESIGNED TO BURN SCRAP LUMBER

PERSON PREPARING REPORT (Signature & Title)	DATE

INCINERATOR INFORMATION (FORM #15-2)

A. INTRODUCTION: THE INFORMATION OBTAINED FROM THIS FORM WILL BE USED TO DETERMINE THE GENERAL EMISSIONS FROM REFUSE, SALVAGE, AND WASTE DISPOSAL INCINERATION.

B. INSTRUCTIONS: PLEASE ATTEMPT TO COMPLETE ALL NON-SHADED SPACES. YOU MAY WISH TO REFER TO YOUR ORIGINAL PURCHASE ORDER, TECHNICAL SPECIFICATIONS BROCHURE OF THE INCINERATOR, ETC. IF SOMETHING IS NOT KNOWN, PLEASE ATTEMPT TO DESCRIBE THE GENERAL ASPECTS OF THE EQUIPMENT AND REFUSE, ETC.

1. INDICATE THE NUMBER OF UNITS OF EACH TYPE OF INCINERATOR.
2. INDICATE AS ACCURATELY AS POSSIBLE THE MANUFACTURER'S NAME AND MODEL NUMBER.
3. DATE THE UNIT WAS INSTALLED.
4. CLASSIFICATION OF INCINERATORS – THE CLASSIFICATION USED SHOULD BE CONSISTENT WITH THOSE SHOWN IN FOOTNOTE (1), LOCATED ON THE OPPOSITE SIDE OF THIS SHEET.
5. INDICATE THE RATED BURNING CAPACITY IN POUNDS PER HOUR.
6. CLASSIFICATION OF WASTES – INDICATE THE TYPE OF WASTE BY THE LIST BELOW:

TYPE 0. TRASH, A MIXTURE OF HIGHLY COMBUSTIBLE WASTE SUCH AS PAPER, CARDBOARD CARTONS, WOOD BOXES, AND COMBUSTIBLE FLOOR SWEEPINGS FROM COMMERCIAL AND INDUSTRIAL ACTIVITIES CONTAINING UP TO 10% BY-WEIGHT OF PLASTIC BAGS, COATED PAPER, LAMINATED PAPER, TREATED CORRUGATED CARDBOARD, OILY RAGS AND PLASTIC OR RUBBER SCRAPS.

TYPE 1. RUBBISH, A MIXTURE OF COMBUSTIBLE WASTE SUCH AS PAPER, CARDBOARD CARTONS, WOOD SCRAP, FOLIAGE AND COMBUSTIBLE FLOOR SWEEPINGS FROM DOMESTIC, COMMERCIAL, AND INDUSTRIAL ACTIVITIES CONTAINING UP TO 20% BY-WEIGHT OF RESTAURANT OR CAFETERIA WASTE, BUT LITTLE OR NO TREATED PAPERS, PLASTIC OR RUBBER WASTES.

TYPE 2. REFUSE CONSISTING OF APPROXIMATELY AN EVEN MIXTURE OF RUBBISH AND GARBAGE BY-WEIGHT.

TYPE 3. GARBAGE, CONSISTING OF ANIMAL AND VEGETABLE WASTES FROM CAFETERIAS, HOTELS, HOSPITALS, MARKETS AND LIKE INSTALLATIONS.

TYPE 4. HUMAN AND ANIMAL REMAINS, CONSISTING OF CARCASSES, ORGANS, AND SOLID ORGANIC WASTES FROM HOSPITALS, LABORATORIES, ABATTOIRS, ANIMAL POUNDS AND SIMILAR SOURCES.

TYPE 5. BY-PRODUCT WASTE, GASEOUS, LIQUID, OR SEMI-LIQUID SUCH AS TAR, PAINTS, SOLVENTS, SLUDGE, FUMES, ETC. FROM INDUSTRIAL OPERATIONS.

TYPE 6. SOLID BY-PRODUCT WASTE SUCH AS RUBBER, PLASTICS, WOODWASTE, ETC. FROM INDUSTRIAL OPERATIONS.

TYPE 7. SEWAGE SLUDGE, THE ACCUMULATED SETTLED SOLIDS DEPOSITED FROM SEWAGE.

7. INDICATE IN POUNDS THE DAILY AMOUNT BURNED.
8. CHECK IF YOUR INCINERATOR HAS AN AUXILIARY BURNER.
9. YOUR BEST ESTIMATE IN STANDARD CUBIC FEET PER MINUTE (SCFM) FOR THE INCINERATOR EXHAUST VOLUME WITH STANDARD CONDITIONS BEING 60°F AND 29.92 INCHES OF MERCURY.

IF THE INCINERATOR HAS MORE THAN ONE EXHAUST STREAM, EACH STREAM SHOULD BE LISTED AND DESCRIBED SEPARATELY WITH REFERENCE TO VOLUME, COLLECTION EQUIPMENT, POLLUTANT AND DISCHARGE POINT. IN CONJUNCTION, COMPLETE FORM MACC #15-6, GIVING PERTINENT COLLECTOR AND EMISSION INFORMATION FOR EACH SOURCE LISTED.

MACL -3

MISSOURI AIR CONSERVATION COMMISSION
P.O. BOX 1062 - JEFFERSON CITY, MISSOURI 65101
TEL: 314 - 635 - 9145

BOILER INFORMATION

(INSTRUCTIONS ON REVERSE SIDE)

(SHADED AREA FOR COMMISSION USE ONLY)

TC	1	FC	2-13
	3		

BOILER IDENT.	NO. OF UNITS	MANUFACTURER'S NAME	AP	DATE OF INSTALLATION MO. - YR.	RATED INPUT (2)	FIRING RATE QUANTITY/HOUR NORMAL	FIRING RATE QUANTITY/HOUR PEAK	FIRING RATE UNITS (3)	METHOD OF FIRING (4)		TYPE OF FUEL (5)	SULFUR %	ASH %	BTU PER LB., GAL., CU. FT.	BOILER EXHAUST VOLUME SCFM
14-16	17-18		19	20-25	26-31	32-37	38-43	44	45	46	47	48-49	50-52	53-58	59-64
														X	

FOOTNOTE (2)
REPORT AS THOUSAND BTU/HOUR

FOOTNOTE (3)
1-CU. FT. IN THOUSANDS
2-GALS. IN HUNDREDS
3-TONS OF COAL
4-TONS OF WOOD
5-OTHER

FOOTNOTE (4)
IN COL. 45
1-SPREADER STOKER
2-PULVERIZED
3-TRAVELING GRATE
4-UNDERFEED
5-OTHER
IN COL. 46
0-WITHOUT FLYASH REINJECTION
1-WITH FLYASH REINJECTION

FOOTNOTE (5)
1-GAS
2-OIL #2
3-OIL #3
4-OIL #4
5-OIL #5
6-OIL #6
7-REFINERY BOTTOM
8-ANTHRACITE
9-BITUMINOUS
0-WOOD

PERSON PREPARING REPORT (SIGNATURE & TITLE)

DATE

C-12

BOILER INFORMATION (FORM MACC #15-3)

A. INTRODUCTION: THE PURPOSE OF THIS FORM IS TO DESCRIBE THE CHARACTERISTICS AND METHODS USED IN YOUR BOILER.

B. INSTRUCTIONS: PLEASE ATTEMPT TO COMPLETE ALL NON-SHADED SPACES. IF SOMETHING IS NOT KNOWN, PLEASE ATTEMPT TO DESCRIBE THE GENERAL ASPECTS OF YOUR BOILER.

1. INDICATE THE NUMBER OF UNITS OF EACH TYPE OF BOILER.

2. INDICATE AS ACCURATELY AS POSSIBLE THE MANUFACTURER'S NAME AND MODEL NUMBER.

3. DATE (MONTH AND YEAR) THE UNIT WAS INSTALLED.

4. INDICATE THE RATED INPUT AS THOUSAND BTU'S PER HOUR.

5. INDICATE THE MAXIMUM AND NORMAL FIRING RATES AT WHICH THE BOILER IS OPERATED. THE UNIT OF QUANTITY SHOULD BE CONSISTENT WITH THOSE SHOWN IN FOOTNOTE (3) ON THE BOTTOM OF THE OPPOSITE SIDE OF THIS PAGE. INSERT THE APPROPRIATE NUMBER IN THE COLUMN MARKED "UNITS".

6. INDICATE THE METHOD OF FIRING FROM THOSE SHOWN IN FOOTNOTE (4) AND THE APPROPRIATE NUMBER INSERTED IN THE FIRST COLUMN UNDER "METHOD OF FIRING". USE THE SECOND COLUMN TO INDICATE WHETHER FLY ASH REINJECTION IS USED. (IF OIL OR GAS, LEAVE THESE SPACES BLANK).

7. INDICATE THE APPROPRIATE NUMBER IN FOOTNOTE (5) UNDER THE COLUMN "TYPE OF FUEL". IF THE BOILER IS EQUIPPED TO FIRE SEVERAL TYPES OF FUELS, LIST ALL TYPES AND GIVE PERTINENT INFORMATION.

8. INDICATE THE PERCENT OF SULFUR IN THIS FUEL.

9. INDICATE THE PERCENT OF ASH IN THIS FUEL.

10. YOUR BEST ESTIMATE IN STANDARD CUBIC FEET PER MINUTE (SCFM) FOR THE BOILER EXHAUST VOLUME.

THE VOLUME OF BOILER EXHAUST SHOULD BE REPORTED IN STANDARD CUBIC FEET PER MINUTE (SCFM) WITH STANDARD CONDITIONS BEING 60°F AND 29.92 INCHES OF MERCURY.

IF A BOILER HAS MORE THAN ONE EXHAUST STREAM, EACH STREAM SHOULD BE LISTED AND DESCRIBED SEPARATELY WITH REFERENCE TO VOLUME, COLLECTION EQUIPMENT, POLLUTANT AND DISCHARGE POINT. SEVERAL EXAMPLES ARE LISTED BELOW:

A. IF A BOILER IS DUCTED INTO COLLECTORS IN PARALLEL, THE EXHAUST SHOULD BE REPORTED AS RECEIVED BY EACH COLLECTOR.

B. IF A BANK OF BOILERS ARE DUCTED INTO A BANK OF COLLECTORS, A RELATIONSHIP SHOULD BE DESIGNATED.

C. IF SIMILAR BOILERS ARE DISCHARGED TO DIFFERENT COLLECTORS, BUT INTO A COMMON STACK, THE EXHAUST AND BOILER INFORMATION SHOULD BE REPORTED INDIVIDUALLY.

IN CONJUNCTION, COMPLETE FORM MACC #15-6, GIVING PERTINENT COLLECTOR AND EMISSION INFORMATION FOR EACH SOURCE LISTED.

MACC # 15-4

MISSOURI AIR CONSERVATION COMMISSION
P.O. BOX 1062 - JEFFERSON CITY, MISSOURI 65101
TEL: 314-635-9145

SOLVENT INFORMATION

(INSTRUCTIONS ON REVERSE SIDE)

(SHADED AREAS FOR COMMISSION USE ONLY)

TC	1	FC	2-13
	4		

SOLVENT EMIS. IDENT.	PROCESS OR OPERATION EXHAUSTING SOLVENTS TO THE ATMOSPHERE					SOLVENTS PROCESSED OR USED AT OPERATION			EVAPORATIVE LOSSES	UNITS (2)
	NUMBER OF UNITS	NAME OR TYPE OF PROCESS OR OPERATION	CODE	AP	DATE OF INSTALLATION MO. - YR.	TYPE OF SOLVENT	COMPOSITION OF SOLVENT	UNITS (1)		
14-16	17-18		19-23	24	25-30		31-38	39	40-46	47

C-14

FOOTNOTE (1)
SPECIFY PERCENT:
1 - WEIGHT
2 - VOLUME

FOOTNOTE (2)
GIVE IN:
1 - POUNDS PER YEAR (LBS/YR)
2 - GALLONS PER YEAR (GAL/YR)

PERSON PREPARING REPORT (SIGNATURE & TITLE)	DATE

SOLVENT INFORMATION (FORM MACC #15-4)

A. INTRODUCTION: THE PURPOSE OF THIS FORM IS TO IDENTIFY AND DESCRIBE YOUR SOLVENT PROCESSES AND FACILITY.

B. INSTRUCTIONS: PLEASE ATTEMPT TO COMPLETE ALL NON-SHADED SPACES. IF SOMETHING IS NOT KNOWN, PLEASE ATTEMPT TO DESCRIBE THE GENERAL ASPECTS OF YOUR SOLVENT PROCESS.

1. INDICATE THE NUMBER OF UNITS OF EACH TYPE OF SOLVENT PROCESS OR FACILITY.

2. INDICATE THE NAME OR BRIEFLY DESCRIBE THE PROCESS OR FACILITY WHICH DISCHARGES TO THE OUTDOOR ATMOSPHERE, E.G., DRY CLEANING, METAL CLEANING, PAINTING OPERATIONS, PETROLEUM HANDLING AND STORAGE, GASOLINE STORAGE, ETC.

3. DATE (MONTH AND YEAR) THE PROCESS OR OPERATION WAS INSTALLED.

4. INDICATE THE TYPE OR TYPES OF SOLVENTS THAT ARE PRODUCED OR PROCESSED, A COMPLETE LIST SHOULD BE GIVEN, E.G., PETROLEUM SOLVENTS, CHLORINATED SOLVENTS, ETC.

5. INDICATE IN PERCENT THE COMPOSITION OF EACH SOLVENT PROCESSED, HANDLED OR PRODUCED. THE MEASURE USED SHOULD BE CONSISTENT WITH THOSE SHOWN IN FOOTNOTE (1) LOCATED AT THE BOTTOM OF THE OPPOSITE SIDE OF THIS PAGE. INSERT THE APPROPRIATE NUMBER FROM THE FOOTNOTE IN COLUMN LABELED "UNITS".

6. YOUR BEST ESTIMATE OF EVAPORATIVE LOSSES PER YEAR FOR EACH SOLVENT USED. IF NOT KNOWN, MAKE THE ASSUMPTION THE AMOUNT ADDED EACH YEAR IS EQUIVALENT TO YOUR LOSSES. THE UNIT USED SHOULD BE CONSISTENT WITH THOSE SHOWN IN FOOTNOTE (2). INSERT THE APPROPRIATE NUMBER FROM THE FOOTNOTE IN THE COLUMN LABELED "UNITS".

MACC # 15-5

MISSOURI AIR CONSERVATION COMMISSION
P.O. BOX 1062 · JEFFERSON CITY, MISSOURI 65101
TEL: 314 · 635 · 9145

(SHADED AREA FOR COMMISSION USE ONLY)

TC	1	FC	2-13
	5		

PROCESS INFORMATION

(INSTRUCTIONS ON REVERSE SIDE)

PROCESS EMIS. IDENT.	PROCESS OR OPERATION EXHAUSTING CONTAMINANTS TO THE ATMOSPHERE					MATERIALS PROCESSED OR PRODUCED AT PROCESS OR OPERATION				PROCESS EXHAUST VOLUME (SCFM)
	NUMBER OF UNITS	NAME OR TYPE OF PROCESS OR OPERATION	CODE	AP	DATE OF INSTALLATION MO. - YR.	TYPE OF MATERIAL	QUANTITY		UNITS (1)	
							NORMAL	PEAK		
14-16	17-18		19-23	24	25-30		31-35	36-40	41	42-47

FOOTNOTE (1)
1 - POUNDS/HOUR 3 - GALLONS/HOUR
2 - TONS/HOUR 4 - CUBIC FEET IN THOUSANDS/HOUR

PERSON PREPARING REPORT (SIGNATURE & TITLE)

DATE

PROCESS INFORMATION (FORM MACC #15-5)

A. INTRODUCTION: THE PURPOSE OF THIS FORM IS TO IDENTIFY AND DESCRIBE YOUR OPERATION. THIS FORM IS NOT APPLICABLE FOR BOILERS OR INCINERATORS. USE IT TO SUPPLY INFORMATION FOR ANY OTHER TYPE OF AIR CONTAMINATION SOURCE.

DESCRIBE EACH PROCESS OR OPERATION SEPARATELY. IN SITUATIONS WHERE THERE ARE SIMILAR PROCESSES, THE INFORMATION ON THIS FORM CAN BE COMBINED. COMBINING IS UNDESIRABLE, FOR EXAMPLE, WHERE SIZE, COLLECTION SYSTEM OR DISCHARGE POINTS ARE DIFFERENT.

B. INSTRUCTIONS: PLEASE TRY TO COMPLETE ALL NON-SHADED SPACES.

1. INDICATE THE NUMBER OF UNITS OF EACH TYPE OF PROCESS.

2. INDICATE THE NAME OR BRIEFLY DESCRIBE THE PROCESS WHICH DISCHARGES TO THE OUTDOOR ATMOSPHERE, E.G., SINTERING, BLAST FURNACES, CRUSHING AND DRYING OPERATIONS, KILNS, CATALYTIC BRACKING UNITS, EVAPORATORS, RECOVERY FURNACES, CASTING, SPRAYING, DEGREASING, ETC.

3. DATE (MONTH AND YEAR) THE PROCESS OR OPERATION WAS INSTALLED.

4. INDICATE THE TYPE OR TYPES OF MATERIALS THAT ARE PRODUCED OR PROCESSED, A COMPLETE LIST SHOULD BE GIVEN.

5. INDICATE THE TOTAL AMOUNT OF MATERIALS PROCESSED OR PRODUCED UNDER NORMAL AND PEAK OPERATING CONDITIONS. THE UNIT USED SHOULD BE CONSISTENT WITH THOSE SHOWN IN FOOTNOTE (1). INSERT THE APPROPRIATE NUMBER FROM THE FOOTNOTE IN THE COLUMN LABELED "UNITS".

6. YOUR BEST ESTIMATE IN STANDARD CUBIC FEET PER MINUTE (SCFM) FOR THE PROCESS EXHAUST VOLUME. THE VOLUME OF PROCESS EXHAUST SHOULD BE REPORTED IN SCFM WITH STANDARD CONDITIONS BEING 60°F AND 29.92 INCHES OF MERCURY.

IF A PROCESS HAS MORE THAN ONE EXHAUST STREAM, EACH STREAM SHOULD BE LISTED AND DESCRIBED SEPARATELY WITH REFERENCE TO VOLUME, COLLECTION EQUIPMENT, POLLUTANT AND DISCHARGE POINT. SEVERAL EXAMPLES ARE LISTED BELOW:

A. IF A PROCESS IS DUCTED INTO COLLECTORS IN PARALLEL, THE PROCESS EXHAUST SHOULD BE REPORTED AS RECEIVED BY EACH COLLECTOR.

B. IF A BANK OF PROCESSES ARE DUCTED INTO A BANK OF COLLECTORS, A RELATIONSHIP SHOULD BE DESIGNATED.

C. IF SIMILAR PROCESSES ARE DISCHARGED TO DIFFERENT COLLECTORS, BUT INTO A COMMON STACK, THE PROCESS EXHAUST AND PROCESS INFORMATION SHOULD BE REPORTED INDIVIDUALLY.

IN CONJUNCTION, COMPLETE FORM MACC #15-6, GIVING PERTINENT COLLECTOR AND EMISSION INFORMATION FOR EACH SOURCE LISTED.

MACC 8 .3-6

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TC	1	FC	2-13
	6		

COLLECTOR AND EMISSION INFORMATION

(INSTRUCTIONS ON REVERSE SIDE)

REF. CODE	TYPE AND EFFICIENCY OF AIR CLEANING EQUIPMENT						DUST, FUMES, GAS, ETC. EMITTED					STACK INFORMATION				
	MCC	MANUFACTURER'S NAME AND MODEL NUMBER	CODE	DATE OF INSTALLATION MO. - YR.	TYPE (6)	OPER. EFF. %	TYPE	CODE	QUANTITY POUNDS PER HOUR NORMAL	QUANTITY POUNDS PER HOUR PEAK	BASIS OF EST. (7)	HEIGHT ABOVE GRADE (FT)	INT'L. DIA. AT TOP (FT)	STACK TEMP. (DEG. F)	EXHAUST VOLUME (SCFM)	MCC
14-16	17		18-20	21-26	27	28-30		31-33	34-39	40-45	46	47-49	50-51	52-55	56-61	62

C-18

FOOTNOTE (6)

1-SETTLING CHAMBER
2-CYCLONE-HIGH DRAFT LOSS
3-CYCLONE-LOW DRAFT LOSS
4-SCRUBBER-HIGH DRAFT LOSS
5-SCRUBBER-LOW DRAFT LOSS
6-ELECTROSTATIC PRECIPITATOR
7-FABRIC COLLECTOR
8-CONDENSER
9-INCINERATOR

FOOTNOTE (7)

1-STACK TEST (DEPT. OF HEALTH)
2-STACK TEST (COMPANY)
3-STACK TEST (OTHER)
4-MATERIAL BALANCE
5-EMISSION FACTOR ESTIMATE
6-OTHER MEANS

PERSON PREPARING REPORT (SIGNATURE & TITLE)

DATE

COLLECTOR AND EMISSION INFORMATION (FORM MACC #15-6)

A. INTRODUCTION: THE PURPOSE OF THIS FORM IS TO IDENTIFY THE CONTAMINANTS AND DETERMINE THEIR QUANTITY UNDER OPERATING CONDITIONS.

ANY PERSON REPORTING AN AIR CONTAMINATION SOURCE USING ONE OR MORE OF THE FORMS FOR PROCESS, COMBUSTION OR INCINERATION MUST COMPLETE THIS FORM. COLLECTOR AND EMISSION INFORMATION IS REQUIRED FOR EACH AIR CONTAMINATION SOURCE.

B. INSTRUCTIONS: PLEASE ATTEMPT TO COMPLETE ALL NON-SHADED SPACES. IF SOMETHING IS NOT KNOWN, PLEASE ATTEMPT TO DESCRIBE THE GENERAL ASPECTS OF THE EQUIPMENT.

1. TYPE AND EFFICIENCY OF AIR CLEANING EQUIPMENT–INDICATE:

   A. AS ACCURATELY AS POSSIBLE THE MANUFACTURER'S NAME AND MODEL NUMBER

   B. DATE (MONTH AND YEAR) THE UNIT WAS INSTALLED

   C. THE TYPE OF COLLECTOR FROM THE LIST IN FOOTNOTE (6), LOCATED AT THE BOTTOM OF THE OPPOSITE SIDE OF THIS SHEET

   D. THE OPERATING EFFICIENCIES TO THE NEAREST TENTH OF A PERCENT FOR EFFICIENCIES GREATER THAN 95%

2. DUST, FUMES, GAS, ETC. EMITTED–INDICATE:

   A. THE SPECIFIC TYPE OF POLLUTANTS SUCH AS HYDROCARBONS, SO_2, NO_x, CO, OZONE, ALLERGENS OR RADIOACTIVE MATERIALS

   B. YOUR BEST ESTIMATE IN POUNDS PER HOUR THE QUANTITY EMITTED UNDER NORMAL AND PEAK OPERATING CONDITIONS. WHERE THERE IS A COLLECTOR, IT IS THE QUANTITY EMITTED AFTER COLLECTION.

   C. THE METHOD USED TO DETERMINE THE EMISSION RATES. INSERT THE APPROPRIATE NUMBER SO SHOWN IN FOOTNOTE (7).

3. STACK INFORMATION–INDICATE:

   A. IN FEET, THE STACK HEIGHT ABOVE THE GROUND

   B. IN FEET, THE STACK EXIT DIAMETER

   C. IN DEGREES FAHRENHEIT, THE STACK EXIT TEMPERATURE

   D. YOUR BEST ESTIMATE IN STANDARD CUBIC FEET PER MINUTE (SCFM) FOR THE STACK EXHAUST VOLUME. THE VOLUME OF EXHAUST SHOULD BE REPORTED IN SCFM WITH STANDARD CONDITIONS BEING 60°F AND 29.92 INCHES OF MERCURY.

   IF A PROCESS HAS MORE THAN ONE EXHAUST STREAM, EACH STREAM SHOULD BE LISTED AND DESCRIBED SEPARATELY WITH REFERENCE TO VOLUME, COLLECTION EQUIPMENT, POLLUTANT AND DISCHARGE POINT. SEVERAL EXAMPLES ARE LISTED BELOW:

   (1) IF A PROCESS IS DUCTED INTO COLLECTORS IN PARALLEL, THE PROCESS EXHAUST SHOULD BE REPORTED AS RECEIVED BY EACH COLLECTOR.

   (2) IF A BANK OF PROCESSES ARE DUCTED INTO A BANK OF COLLECTORS, A RELATIONSHIP SHOULD BE DESIGNATED.

   (3) IF SIMILAR PROCESSES ARE DISCHARGED TO DIFFERENT COLLECTORS, BUT INTO A COMMON STACK, THE PROCESS EXHAUST AND PROCESS INFORMATION SHOULD BE REPORTED INDIVIDUALLY.

APPENDIX D

REVISED GRID NUMBERING

KANSAS CITY AQCR

REVISED GRID NUMBERING

KANSAS CITY AQCR

New Grid Grid No.	Lower Left Coord.		Area	Old Grid Grid No.	Area
1-A	330	4400	100	1	25
2-D	340	4400	100	2	25
				3	35
				4	25
				5	25
8-D	340	4390	100	8	25
				9	25
				10	25
				11	25
21-B	400	4370	100	21	25
				22	25
23-B	410	4370	100	23	25
				29	25
24-B	420	4370	100	24	25
				25	25
26-A	430	4370	100	26	25
27-D	330	4360	100	27	25
				28	25
				34	25
				35	25
30-B	310	4360	100	30	25
				31	25
32-B	320	4360	100	32	25
				33	25
45-B	430	4360	100	45	25
				46	25
54-D	350	4350	100	54	25
				55	25
				60	25
				61	25
56-D	360	4350	100	56	25
				57	25
				62	25
				63	25
58-D	370	4350	100	58	25
				59	25
				64	25
				65	25

Grid No.	Lower Left Coord.		Area	Grid No.	Area
71-B	430	4350	100	71	25
				72	25
75-D	330	4340	100	75	25
				76	25
				85	25
77-D	340	4340	100	77	25
				78	25
				81	25
				88	25
79-D	350	4340	100	79	25
				80	25
				89	25
				90	25
81-D	360	4340	100	81	25
				82	25
				91	25
				92	25
83-D	370	4340	100	83	25
				84	25
				93	25
				94	25
103-D	430	4340	100	103	25
				104	25
107-D	330	4330	100	107	25
				108	25
				119	25
				120	25
156-B	410	4330	100	156	25
				157	25
158-A	420	4330	100	158	25
161-D	330	4320	100	161	25
				162	25
				167	25
				168	25
184-B	400	4320	100	184	25
				185	25
186-B	310	4310	100	186	25
				187	25
188-D	320	4310	100	188	25
				189	25
				190	25
				191	25

Grid No.	Lower Left Coord.		Area
214-B	400	4310	100
216-D	320	4300	100
221-D	340	4300	100
226-D	365	4300	100
228-D	380	4300	100
259-D	380	4270	100
269-B	380	4250	100
271-B	390	4250	100
273-A	400	4250	100

Grid No.	Area
214	25
215	25
216	25
217	25
218	25
219	25
221	25
222	25
231	25
232	25
226	25
227	25
236	25
237	25
229	25
230	25
239	25
240	25
259	25
260	25
261	25
262	25
269	25
270	25
271	25
272	25
273	25